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AN INFECTION OF THE ROCKY MOUNTAIN SPOTTED FEVER TYPE

Identification in the Eastern Part of the United States

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In connection with studies of cases of disease of the typhus-Rocky Mountain spotted fever group occurring in the eastern part of the United States (1), attempts were made to establish strains of the viruses in animals. Three of the cases from which blood was drawn for animal inoculations were residents of northern Virginia. From these three cases, strains of virus were established in guinea pigs. These strains are apparently closely related to, or identical with, Rocky Mountain spotted fever.

The first, or R strain, was obtained by inoculating into each of four guinea pigs 4 c. c. of whole blood obtained from case V–8 on the tenth day of the disease.

The second, or T strain, was obtained from case V–20 by inoculating into each of three guinea pigs 4. c. c. of whole blood obtained on the seventh day of the disease.

The third, or H strain, was obtained from case V–21 by inoculating into each of two guinea pigs 4 c. c. of whole blood obtained on the sixth day of the disease.

The R strain was carried in guinea pigs for eight generations, when it was discontinued. The T and the H strains have been continued and are now in the twenty-ninth and thirtieth generations, respectively.

In the first 25 generations of the T and H strains 170 transfers have been made, using 674 guinea pigs. Of these animals, 28 died too early for the determination of any reaction to the inoculations, and 29 showed definite evidence of complicating infections. Of the remaining 617 guinea pigs, 558, or 90.4 per cent, reacted positively. The transfers have usually been made by intraperitoneal inoculation of whole cardiac blood or of brain emulsion made by emulsifying the brain in 20 c. c. of normal salt solution.

The identity of the T and H strains was determined by cross-immunity tests in guinea pigs. It was found that guinea pigs which had recovered from infection with the T virus failed to react when subsequently inoculated with the H virus and likewise those having recovered from the H virus were subsequently immune to the T virus.

In each test fresh guinea pigs were employed as controls. Further check upon the tests was made in some instances by inoculating guinea pigs which had recovered from the homologous strain at the same time that the guinea pigs to be tested and the fresh guinea pigs were inoculated.

THE DISEASE IN GUINEA PIGS

The incubation period varies, being in the majority of instances from two to six days. There is a definite tendency toward a slightly shorter incubation period following blood inoculations as compared with that when brain emulsion is used. The febrile period lasts from 5 to 10 days, with the temperature ranging between 40° and 41° C. In a few instances guinea pigs failed to manifest any febrile reaction but subsequently were immune to a second inoculation with the same virus—a fact suggesting the occurrence of an inapparent infection. Death occurred in approximately 25 per cent of the guinea pigs reacting. In only one instance was there observed any suggestion of scrotal involvement. In this animal mild redness and swelling of the scrotum occurred during the febrile period. Transfers were made from this guinea pig by blood, brain tissue, and testicular washings, none of which transfers resulted in reactions involving the scrotum.

Post-mortem examination revealed enlarged, dark red, smooth spleens. The brains of 14 guinea pigs have been examined microscopically and many showed the occurrence of small focal cellular glioses and occasional adventitial lymphocyte infiltration and fibroblast proliferation about capillaries and more or less pial lymphocyte infiltration.

THE DISEASE IN MONKEYS

Of eight monkeys (*Macacus rhesus*) inoculated with guinea pig passage virus, four developed a febrile reaction from five to seven days after inoculation. The temperatures ranged from 40° C. to 41.4° C. Fever lasted from five to nine days. Death occurred in one instance. A rash developed in two monkeys, one of which had no febrile reaction. This rash appeared as a maculo-papular petechial eruption. In one animal this was limited to the face, while in the second the brows, face, ears, upper arms, thighs, and buccal mucosa were involved. Microscopic examination of sections of skin from the monkey which died showed frequent capillary endothelial necrosis and thrombosis, pericapillary hemorrhages, and numbers of fragmented leucocytes in and about the thrombosed capillaries.

Agglutination tests[1] with *proteus* X_{19} (type O) were made with blood serum from each of the eight monkeys. Of the four monkeys

[1] Kerlee and Spencer, Pub. Health Rep., 1929, vol. 44, pp. 179–182, and Spencer and Maxcy, Pub. Health Rep., 1930, vol. 45, pp. 440–446, have reported on agglutinins, for certain *proteus* strains, in the blood in connection with Rocky Mountain spotted fever.

that had developed a febrile reaction following inoculation with virus, the serum of one showed a slight increase in agglutinins, the second gave complete agglutination in the 1:40 dilution and partial in 1:80, the third gave complete agglutination in 1:320, partial in 1:640 and 1:1280, while the fourth gave complete agglutination in 1:640 and partial in 1:1280. The serum from one of the monkeys which had failed to show clinical signs of the disease gave complete agglutination in the 1:640 dilution and partial in 1:1280.

Microscopic examination of brain sections from the monkey which developed a rash and later died showed a few patches of pial infiltration by lymphocytes, plasma cells, and macrophages; slight glia cell accumulation along a few vessel sheaths; hemosiderin phagocytes in sheath of one arteriole; moderate adventitial and intimal proliferation on one side of one arteriole; one paravascular oval focus of small-celled gliosis.

THE DISEASE IN RABBITS

Ten male rabbits were inoculated, four with emulsion of brain tissue and six with whole blood of guinea pigs in the third or fourth day of fever. Two of the four inoculated with brain tissue and three of the six inoculated with blood developed febrile reactions after incubation periods ranging from four to seven days. Four of the five which reacted with fever also exhibited involvement of the scrotum, which began as redness and swelling followed by ulceration and sloughing. Of the five reacting clinically, only two have progressed far enough to determine the Weil-Felix reaction with their sera; both of these showed the development of agglutinins. Sections of the skin of the scrotum in two cases were examined microscopically. The reports of the microscopic examinations were as follows:

Rabbit H 3.—Skin of scrotum: Numerous thickened capillaries, often with adventitial fibroblast proliferation, sometimes with lymphocyte infiltration, frequently with pericapillary hemorrhage. Much diffuse edema and increase in size and number of fibroblasts. Epithelium partly denuded. There is diffuse lymphocyte and plasma cell infiltration.

Rabbit H 4.—Skin of scrotum: The corium is swollen, edematous, and necrotic. There is a zone of demarcation on the deep side, which is densely infiltrated in the surviving area by polymorphonuclear leucocytes and over the margin of necrosis by closely packed pyknotic nuclear fragments. The vessels in the necrotic corium are dilated, some blood filled, others thrombosed by masses of laked and fragmented red and white corpuscles. The subjacent subcutaneous tissue contains many lymphocytes as well as the above noted leucocytes. There is partial coagulation necrosis of the epidermis.

IDENTITY OF THE DISEASE, WITH RESULTS OF CROSS-IMMUNITY TESTS

Since endemic typhus has been reported from the same locality in which the disease under study occurs, a determination of the relation between these two diseases was first attempted. The endemic typhus strain used in this study was isolated from a human case in Wilmington, N. C., in 1928 by Maxcy (2).

The reaction in the guinea pigs produced by the virus of endemic typhus is less severe and the appearance of the spleen is much less altered than following inoculations with the T or H strains of virus. In endemic typhus in male guinea pigs, involvement of the genitalia is the rule; while in guinea pigs inoculated with T or H strains of virus, involvement has been noted only once in 600 male guinea pigs.

No evidence of cross immunity between the Wilmington strain of endemic typhus virus and either the T or H strains of virus has been obtained. In each cross-immunity test fresh guinea pigs have been used as controls, and in a few instances further check has been made by inoculating guinea pigs that have recovered from inoculations with the homologous strain at the time when the fresh guinea pigs and the ones to be tested were inoculated.

The relation of the T and H strains of virus with European typhus virus has also been studied in guinea pigs. The strain of European typhus used was isolated at the Institute of Hygiene, Warsaw, Poland, prior to 1926 and brought to the National Institute of Health by Doctor Maxcy in 1928.

The reaction of guinea pigs to the T and H strains of virus is more severe than the reaction to European typhus virus. The incubation period is shorter, deaths occur in guinea pigs apparently uncomplicated by secondary infections, and the spleen is as a rule much larger.

No evidence of cross immunity between European typhus virus and either the T or H strains of virus was obtained. All cross-immunity tests were controlled by inoculating fresh guinea pigs and in some instances further by inoculating guinea pigs recovered from inoculation with the homologous virus with the same dose of the same material.

The relation of the T and H strains of virus to Rocky Mountain spotted fever was studied in guinea pigs and monkeys. The strain of Rocky Mountain spotted fever virus used in the studies was recently obtained from the Bitterroot Valley of Montana.

There occurs a variation between the two diseases in the reaction in guinea pigs. The reaction to the T or H virus is less severe. Approximately 25 per cent of guinea pigs uncomplicated by secondary infections inoculated with T or H virus die, while death is the rule with a well-established strain of Rocky Mountain spotted fever virus. Involvement of the scrotum commonly occurs in the latter, while in the former it has so far been noted in only one instance. In this instance there was evidence of redness and swelling of the skin of the

scrotum, but the tunica appeared normal on examination. The blood, brain, and testicular washings from that guinea pig were each inoculated separately into fresh guinea pigs. None of these showed any involvement of the scrotum.

In guinea pigs the appearance of the spleen following inoculation with T or H virus is apparently identical with reactions occurring subsequent to inoculation with Rocky Mountain spotted fever virus.

Guinea pigs recovered from the disease produced by the T or H virus apparently develop a definite immunity to subsequent inoculations with Rocky Mountain spotted fever virus. In each test fresh guinea pigs were used as controls, being inoculated with the same dose of the same material at the same time. The temperature records of four guinea pigs following inoculation with T or H virus are tabulated in Table 1. There are also shown the temperature reactions of these guinea pigs and of four fresh guinea pigs inoculated with 1.5 c. c. of whole blood obtained from a guinea pig on the fourth day of fever following inoculation with Rocky Mountain spotted fever virus.

TABLE 1.—*Daily temperature records of guinea pigs inoculated with T virus and of guinea pigs inoculated with H virus, all later inoculated with Rocky Mountain spotted fever virus, and records of control animals*

Guinea pig							
H 291	H 294	TM 20	MT 60	Fresh	Fresh	Fresh	Fresh
[1] 38.7	[1] 39.1	[2] 39.4	[2] 39.2				
38.6	38.8	39.5	38.9				
38.9	38.7	39.3	38.9				
39.3	39.5	39.0	38.9				
39.7	39.3	39.5					
39.5	40.0	39.6	39.5				
40.0	40.3	40.5	41.0				
39.7	40.2	40.3	41.3				
			41.2				
39.8	40.2	40.5	40.5				
39.7	40.1	40.6					
39.6	39.7	40.2					
	39.8	39.7	40.3				
	39.3	39.6	40.0				
		40.0	40.1				
			40.1				
		39.1	39.8				
		39.3	40.0				
12-day interval.	10-day interval.	6-day interval.					
			40.5				
			39.7				
			6-day interval.				
([3])	([3])	([3])	([3])	[2] 39.2	[2] 39.1	[2] 39.2	[2] 39.1
38.8	39.2	38.8	39.3	39.0	38.8	38.7	39.0
38.8	39.5	39.1	38.7	39.1	38.8	39.1	38.6
38.5	39.4	38.8	39.0	39.1	39.5	40.5	39.4
38.8	39.1	38.8	38.7	39.7	39.8	[4] 40.2	40.1
38.9	39.4	39.1	39.1	[4] 40.4	[4] 40.8	[4] 41.0	[4] 40.3
39.6	39.5	39.2	39.0	[4] 40.9	Dead.	[4] 41.2	[4] 41.0
38.6	39.4	39.0	38.5	[4] 40.8	----------	[4] 40.9	[4] 41.2
38.5	39.0	39.2	38.7	[4] 40.6	----------	[4] 40.0	([5])
38.5	39.0	39.0	39.0	[4] 39.5	----------	38.5	----------
38.5	39.0	39.0	39.0	[4] 39.3	----------	Dead.	----------
38.5	38.8	38.7	38.7	[4] 39.2	----------	----------	----------
38.7	38.8	38.5	38.3	[4] 38.0	----------	----------	----------
38.7	39.2	39.3	39.7	Dead.	----------	----------	----------
38.3	39.6	39.2	39.3	----------	----------	----------	----------

[1] Inoculated with H virus.
[2] Inoculated with T virus.
[3] Inoculated with Rocky Mountain spotted fever virus.
[4] Redness and swelling of scrotum.
[5] Killed for transfer.

Due to the high mortality of guinea pigs following inoculation with Rocky Mountain spotted fever virus, there has been available but one recovered guinea pig to test for immunity to the T or H virus. A male guinea pig was inoculated intraperitoneally on November 25, with 1 c. c. of Rocky Mountain spotted fever blood virus obtained from a guinea pig on the fourth day of fever. This guinea pig reacted with fever after an incubation period of one or two days and had moderate involvement of the scrotum. Twenty days after this inoculation the guinea pig was reinoculated with T brain virus, obtained from a guinea pig in the fourth day of fever. Two fresh guinea pigs were inoculated with the same virus. Both of the fresh guinea pigs reacted after incubation periods of one and four days, respectively, while the guinea pig recovered from Rocky Mountain spotted fever failed to react. In Table 2 are tabulated the febrile reactions in these pigs.

TABLE 2.—*Daily temperature records of a guinea pig inoculated with Rocky Mountain spotted fever virus and later inoculated with the T virus, and records of control animals*

Guinea pig		
S. F. 1	Fresh	Fresh
(1) 39.3		
39.7		
40.1		
40.7		
[2] 40		
[2] 39.6		
12 day interval.		
[3] 39.3	[3] 39.2	[3] 38.5
38.3	38.2	39.5
38.8	38.5	39.7
38.7	39.5	39.8
39.0	39.2	40.0
39.5	39.8	40.5
39.7		
39.1	40.0	40.6
39.4	39.6	40.0
39.2	39.4	39.8
39.4	39.0	38.6
39.2		
39.2		

[1] Inoculated with Rocky Mountain spotted fever virus.
[2] Redness and swelling of scrotum.
[3] Inoculated with T virus.

The reactions in monkeys following inoculations with T or H virus are similar to but less severe than those reported for monkeys inoculated with Rocky Mountain spotted fever virus. Wolbach (3), in 1919, inoculated four monkeys with Rocky Mountain spotted fever virus, all of which died. Spencer (4) inoculated five with the same result. Of four monkeys which ran a febrile course following inoculation with the T or H virus, three lived.

One monkey which had recovered from infection with T virus and one recovered from H virus were subsequently inoculated with Rocky Mountain spotted fever virus. These monkeys failed to show any reaction, while a fresh monkey inoculated with the same dose of the same material reacted with fever and rash. This monkey died on the thirteenth day after inoculation. The temperature records of the monkeys used in this test are shown in Table 3.

TABLE 3.—*Daily temperature records of a monkey inoculated with T virus and a monkey inoculated with H virus and both later inoculated with Rocky Mountain spotted fever virus, and record of the control animal*

Monkey					
348		347		Fresh	
A. M.	*P. M.*	*A. M.*	*P. M.*	*A. M.*	*P. M.*
[1]38.8					
38.8					
38.9		[1]39.0			
38.2		39.0			
39.4		39.0			
39.4		39.7			
40.2		39.4			
40.1	40.8	40.4	40.4		
40.2	40.6	40.4	40.8		
40.2		40.7	40.7		
40.2	40.4	40.4			
40.0	40.2	40.8	40.6		
39.4	39.0	40.8	40.4		
39.6	38.0	40.0			
39.3	39.6	40.1	40.8		
		40.0	40.1		
		39.6	39.4		
		38.6	38.8		
		38.9	38.9		
	[2]		[2]	39.3	[3]38.6
	38.6		38.8	39.2	39.1
36.3	38.3	39.0	38.8	39.3	39.1
38.8	38.8	39.0	39.2	39.5	39.0
38.3	38.8	39.2	39.3	39.4	39.5
38.2	38.8	39.1	39.2	40.3	40.5
38.8	39.0	39.0	39.1	40.5	40.1
38.3	38.1	38.5	38.6	40.1	39.8
38.8	39.0	38.9	39.0	40.2	40.1
38.1	38.6	38.5	38.8	40.5	40.8
38.0	38.6	38.8	39.1		40.7
37.8	38.5	38.5	38.7	36.7	Died.
38.2	38.7	38.7	38.5		
38.5	38.6	38.6	38.8		
38.7	39.2	38.8	38.7		
39.0	39.1	38.9	38.9		
39.3	39.3	38.8	38.8		
38.8	39.3	38.8	39.1		

[1] Inoculated with T virus.
[2] Inoculated with H virus.
[3] Inoculated with Rocky Mountain spotted fever virus.

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THE TYPHUS–ROCKY MOUNTAIN SPOTTED FEVER GROUP

An Epidemiological and Clinical Study in the Eastern and Southeastern States

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In connection with the investigation of endemic typhus in the Eastern States, an epidemiological study was begun in April, 1930. It became evident very early in the course of our field investigations that many of the cases observed by us differed materially in clinical respects from the disease described by Brill, Maxcy, and others.

Maxcy had described cases of a mild endemic typhus occurring in cities in the Southeastern States and had presented epidemiological evidence of a rodent reservoir of the disease and of some ectoparasite of the rat as the probable vector.

Early in our studies it was noted that most of the cases living in rural districts in the northern tier of the States covered by our investigation, and urban dwellers vacationing in the country, suffered from a very severe disease, which did not correspond to the clinical picture of endemic typhus, and which resembled the spotted fever of the Rocky Mountains more closely than it did any other disease. A quite high proportion of these cases gave a history of tick bite within a short time preceding onset. Furthermore, there was seldom evidence of rodent infestation in association with these cases.

In this report a partial analysis will be made of 100 selected cases, separated, on the basis of epidemiologic considerations, into two groups of equal size. Most of the cases were visited at least once during the acute stage, and many were observed repeatedly. Much of our clinical data, however, were supplied by members of the medical profession who attended the patients.

The first group, essentially urban, consists of persons who in most instances had not left city environment. These cases are clearly New World endemic typhus, already well described by Maxcy and others. The other group, composed of cases of known or presumed rural origin, which frequently followed tick bite or occurred under conditions making tick bite possible, is clinically Rocky Mountain spotted fever, or a disease clinically indistinguishable from it.

The following are histories of representative cases from each group:

CASES OF ENDEMIC TYPHUS

Case F–9–T.—White; male; age, 46 years; cigar maker. Patient became ill on June 13, with dizziness and general aching. He worked the following day, but after that took to bed. His fever at no time exceeded 103.3° F.; on the fourteenth day his temperature became normal. The pulse was slow. There was a slight conjunctivitis. The patient was drowsy most of the time. On the fifth day the eruption appeared, first in the lower part of the axillæ and on the medial surfaces of the upper arms, next on the chest, upper abdomen, and back. There was no further extension. The lesions were macules which disappeared on pressure. After the ninth day, there was no evidence of the rash. The white blood cell count was 5,800 on the ninth day. The urine was free of albumin. The Weil-Felix reaction was positive in a dilution of 1:160 on the ninth day. The patient made an uneventful and prompt recovery.

There was no history of contact with a previous case. The patient's time had been divided between home, factory, and coffee shop. He lived and worked under good sanitary conditions. The coffee shop, where he spent several hours of leisure time each day, was heavily infested with rats. There was no history of any insect bite. Several other persons who frequented this coffee shop had developed typhus, although all lived and worked under good sanitary conditions.

Case G–226–S.—White; male; age, 34 years; druggist. After a period of malaise lasting two or three days, during which time his throat was quite sore, the patient was seized with a severe chill at 11.30 p. m. on December 5. This was followed by a rapidly rising temperature, headache, and pains in the back of neck, back, and limbs. These symptoms continued for two days, after which there was a 36-hour interval of comparative comfort. The same symptoms, with the exception of the sore throat, then returned. The fever attained a maximum of 104.7° F. on the seventh day, and dropped to normal on the fifteenth day. In 12 hours, however, fever reappeared, and continued for two days more. The pulse rate ranged from 80 to 110. The patient suffered with insomnia, and was quite depressed and irritable. The rash appeared on the fifth day, at first over the epigastrium, then on the chest, flanks, and back, and the flexor surface of the upper arms. It was maculo-papular when fully developed, and at no time involved the wrists and ankles, or the face. It began to fade in the middle of the second week, and before the end of that week there was no trace of it. The Weil-Felix reaction was positive in a dilution of 1: 640. The white blood count was 7,600. The urine contained a trace of albumin.

The sanitary conditions of the dwelling were satisfactory. The place of employment was adjacent to a grocery and feed store, and was heavily rat-infested. The patient's avocation for five or six weeks prior to onset of illness had been the trapping of these rats. In this he was assisted by a fellow employee. The rats were caught in cage traps and taken to a back lot and killed with chloroform. Swarms of fleas were observed on these rats. The patient stated that he was bitten by fleas several times, but recalled no dates. On November 22 the assistant trapper came down with typhus fever. Five other employees of the establishment remained well.

Case M–41–B.—White; male; age, 42 years; policeman. Patient was in good health until December 11, when he had a chill at about 6 p. m. This was followed by generalized aching and fever. His throat was sore for several days. He was constipated. On the third day he was nauseated, and vomited. There was an unproductive cough for a few days. The fever attained a maximum of 103° F. on the ninth day, then receded gradually to a maximum of 101.4° F. on the thirteenth day. On the fourteenth day it dropped to normal and all symptoms subsided, but there was a low grade febrile exacerbation which started on the fif-

teenth day and lasted about 10 days. The patient was lethargic but complained of severe frontal headache. The conjunctivæ and the pharyngeal mucosa were markedly injected. The spleen was not palpable. A scant maculopapular rash developed on the chest and abdomen on the fifth day. On the ninth day this involved also the back, and there were a very few lesions on the arms. The rash disappeared before the end of the second week. The leucocyte count was 10,300. The urine was free of albumin. The blood serum agglutinated *proteus* X_{19} in a dilution of 1:100 on the tenth day, and 1:200 on the nineteenth day.

The patient's home was free of rodents. There was no known contact with a previous case. The patient's duties included patrolling a large market place. For amusement at night he shot rats with a small caliber rifle, in competition with another officer. After a period of shooting, the rats were collected and counted. Eleven days before onset of illness after reaching his home he discovered a red, raised itching lesion on his left ankle that he and his wife regarded as an insect bite.

Case M–43–B.—White; male; age, 26 years; laborer. Patient's illness began on the afternoon of December 24 with chills, generalized aching, and fever. On the next day he was nauseated. Fever lasted 14 days, attaining a maximum of 104.4° F. on the ninth day, with marked morning remissions, and terminating by crisis. There was, on the twelfth day, a pseudocrisis. The patient was drowsy but always oriented. He complained of headache, and was constipated. The face was flushed, the conjunctivæ markedly injected. The tongue was coated. The pharyngeal mucosa was injected, the breath fetid. The spleen could not be felt. Reflexes were normal. On the sixth day a red maculo-papular rash appeared on the chest. On the eighth day this was generalized, but did not involve the palms, soles, or face. It was most abundant over the chest. Most of the lesions disappeared on pressure. The leucocyte count was 6,100 on the thirteenth day. The urine did not contain albumin. The Weil-Felix reaction was positive in a dilution of 1:100 on the ninth day, and 1:2560 on the fourteenth day. Recovery was uneventful.

The patient lived, during the two weeks preceding illness, on the ground floor of a tenement house in a poor section of a large eastern city. He had been out of work for several months. He slept on the kitchen floor, and was frequently awakened by rats, which would run over his pallet. He was bitten by fleas several times. A year old infant, who slept in a crib in the same room, remained well. The other members of the household denied insect bites. The premises were heavily infested with *Rattus norvegicus* which, however, were confined to the basement and ground floor. Live rats obtained on these premises were found to be infested with the fleas *Xenopsylla cheopis* and *Ceratophyllus fasciatus*, and the common rat mite *Echinolaelaps echidninus*.

CASES OF THE ROCKY MOUNTAIN SPOTTED FEVER TYPE

Case V–4.—White; female; age, 6 years; school girl. On the afternoon of May 2 patient came home from school with flushed face and felt chilly. The next day she remained in bed, complaining of headache. Her temperature was 103° F. She complained of pain in the back of the neck and aching of the upper arms and the thighs. She was constipated and had no appetite. She vomited on the third and fourth days. By the fourth day the fever had risen to 105° F., and continued, with morning remissions of 3° to 4°, for a total of 15 days, becoming normal by rapid lysis. There was mild delirium in the second week. The spleen was palpable. On the fifth day a faint rose rash appeared on the arms and legs. This was not discernible in the mornings for several days thereafter. On the tenth day the rash was generalized and definitely petechial. The rash was most pronounced

over the forearms, the calves and ankles, the extensor surface of the upper arms, the shoulders, and the back, in the order enumerated. There were a few spots on the thighs and buttocks, the chest and abdomen, the palms and soles, and the face. The Weil-Felix reaction was positive in serum dilution of 1: 160 on the tenth day. Convalescence was fairly rapid, with prompt restoration of a normal psyche and sensorium. After defervescence there was a branny desquamation over the calves and forearms.

The patient had lived her entire lifetime in an old farmhouse located in a large clearing in a heavily forested area. She had not been out of the immediate vicinity for several months. Home sanitation was above reproach. There was no evidence of rodent infestation. Six days prior to onset of illness a yearling tick (nymph) was found attached to the skin in the right axilla and was removed by the child's mother. This tick was noticed while the child was being dressed in the morning. At the height of the illness there was discernible at the site of the bite a scab-covered ulcer about 1 centimeter in diameter. The axillary lymph nodes on this side were considerably larger than those on the opposite side. There was no other history of bite by any arthropod in the patient or in any of the other members of the family of seven persons.

Case M–7.—White; female; age, 40 years; housewife. Patient was taken ill on May 8 with a frontal headache. She remained up and about until two days later, when she had a slight chill, abdominal pain, nausea, and vomiting. This was followed by rising temperature which reached a maximum of 105° F. on the seventh day; it remained near this level for nine days, with morning remissions of 1° to 2°, then receded gradually, touching normal on the morning of the twenty-third day. An afternoon elevation of 1° to 1½° continued for another week. The pulse ranged from 90 to 120. At onset and during the first week there was constipation; from the tenth to the seventeenth day urination and defecation were involuntary. There was a slight conjunctivitis. The face was flushed. The tongue was dry and coated, with red edges. The spleen was slightly enlarged. A mental confusion observed during the first few days was succeeded by stupor, with episodes of violent delirium. There was some cervical rigidity. A macular rash appeared on the seventh day, and became petechial within four days. It was generalized, but most pronounced on the wrists and ankles. Evidences of it persisted for some weeks after recovery. The white blood cells numbered 20,700 on the tenth, 18,800 on the fifteenth, and 11,600 on the twenty-first day. The urine contained a trace of albumin and a few granular and hyaline casts. The blood serum agglutinated *proteus* X_{19} in a dilution of 1: 1280.

The patient lived in a semirural community. There was no rodent infestation of the premises, and the sanitation in general was above reproach. On two occasions, one 10 days and the other 4 days prior to onset, she visited a large city near by. There was no other travel. Her only occupation aside from housework was tending the garden, which is located at the edge of a forest. At some not definitely ascertainable time between the two visits referred to above, she found, on returning from her gardening, a small tick attached to the leg. No lesion was observed at this point. She had no knowledge of any other bites by arthropods. Other members of the family had not been bitten by any insect or arachnid.

Case V–8.—White; male; age, 19 years; hunter and trapper. In the evening of May 15 patient felt dizzy and chilly. He spent a few hours in the woods the next morning, but in the afternoon was feverish and remained at home. The next day he had a severe frontal headache, pains in the calves of the legs, and a high fever. He was nauseated, and vomited several times. His fever ranged from 101° F. to 104.8° F., with morning remissions. Defervescence was by lysis, the temperature becoming normal on the twenty-second day. The headache continued for 16 days. The patient was constipated during the first week. Nausea was frequent.

Vomiting of green fluid recurred at irregular intervals for two weeks. The pulse ranged from 100 to 130 per minute, and was full and of good tension. On the tenth day he became irrational, and was at times very noisy and quarrelsome, getting out of bed several times. These episodes continued for a week, alternating with periods of stupor, verging on coma. Urination and defecation were involuntary during this week. After the end of the second week, and until subsidence of fever, the patient perspired copiously several times daily, notably during the first part of the night. The face was dusky. There was a slight conjunctivitis. The tongue was dry and coated, with red edges, the lips were cracked, and the pharyngeal mucosa was moderately injected. The spleen was palpable. There were abrasions on two fingers of the right hand, and a crusted lesion about 2 centimeters in diameter over the left lateral malleolus. On the sixth day a macular rash was noticed on the arms and legs. Within three days this had extended to all parts of the body. The rash was barely discernible in the mornings, but in the afternoon, with increased fever, it was distinct. By the tenth day it had become definitely petechial, especially over the extremities. The spots ranged from 1 to 5 millimeters in diameter and from a lurid red to a dusky purple. The purpuric spots were most numerous over the wrists and ankles, and many of them coalesced. They were quite pronounced also over the shoulders and the upper back. Over the chest and abdomen the spots were few, with macules predominating. On the face and the palms and soles the eruption was exclusively macular. The rash attained its maximum development by the end of the second week, then faded gradually. Evidences of it persisted, however, for several weeks on the arms and ankles, as purplish brown spots which became very prominent when a tourniquet was applied. Convalescence was slow, with prolonged weakness but a fairly rapid clearing of sensorium. The leucocyte count was 18,000 on the fifteenth day. The urine contained a trace of albumin throughout the febrile period. The blood serum agglutinated *B. proteus* X_{19} in a dilution of 1:160 on the tenth, and 1:640 on the fourteenth day.

The patient had for several months been hunting and trapping, day and night, in a thickly wooded region. He lived in a house, located in a large clearing, the sanitation of which was satisfactory. There was no rodent infestation. He had not been in contact with a previous case. He denied knowledge of any insect bite. Three days before onset of present illness he noticed that his four dogs were heavily infested with ticks. He removed a large number of the engorged ticks and crushed them between two pebbles. In so doing he smeared a considerable quantity of blood and tick juice on his hands. He then wiped his hand on a dog's hide. The one other occupant of the house had not been bitten by any insect this year.

Case V–13.—White; female; age, 33 years; clerk. On the evening of June 29 patient felt weak and dizzy and slightly nauseated. Toward noon of the next day she had a chill, lasting nearly half an hour, followed by a sweat. By the afternoon of the fourth day her fever had reached 103.4° F. During the latter part of the first week and during the entire second week it reached 103.6° F. to 105° F. each afternoon, with marked morning remissions of 4° to 5°. In the third week the daily maximum was about 2° lower. On the twenty-second day the temperature first receded, temporarily, to normal, and two days later became permanently normal. The pulse ranged between 88 and 116. She complained of pains in the shoulders, but not of headache. There were several chills in the first week. The tongue was dry and coated. The spleen and liver were not palpable. There was a moderate conjunctivitis. The mental condition was one of apathy. A maculopapular rash was first noticed on the extremities on the seventh day. At the end of the second week it was most marked on the arms, and involved also the trunk, but not the face. It was then definitely petechial. The

lesions persisted for some weeks after subsidence of fever, being particularly evident after application of a tourniquet. The white blood cells numbered 11,200 on the twelfth day, with 69 per cent polymorphonuclear neutrophiles and 29 per cent lymphocytes. The urine contained a faint trace of albumin. The blood serum agglutinated *proteus* X_{19} in a dilution of 1 : 320 on the twentieth day, and 1 : 5,120 a week after defervescence. There were no complications, but convalescence was protracted.

The patient lived in a suburb of a large city, under good sanitary conditions. On the day preceding her initial symptoms, she found an engorged tick attached to the scalp back of the left ear. She had been in a forest several miles distant two days before, and had brushed several ticks off her person at that time. The four other members of the household denied bites by ticks or any insects during this year.

CLINICAL FEATURES

Onset.—The onset was abrupt enough in the majority of cases in both groups so that a definite hour of onset could be stated. This was generally in the late afternoon or early evening. In some cases this had been preceded by a period of lassitude, malaise, or restlessness, lasting from one to seven days. The initial symptoms were, in general, quite similar in both diseases, and were usually a chill or chilliness, headache, fever, anorexia, and prostration. In the Rocky Mountain spotted fever type cases the generalized aching was more prominent, and several of them complained of pain in the neck; occasionally there was abdominal pain.

Fever.—The fever reached 102° to 105° F. in from 3 to 10 days, and was characterized by morning remissions of 1° to 3° F. In some of the more severe Rocky Mountain spotted fever type cases the remissions were not marked, or were absent. The maximum temperature recorded in the endemic typhus group was 105.2° F.; in the Rocky Mountain spotted fever type 107.2° F.; there was considerable variation in the maxima in both groups. The duration of fever in the two diseases is shown in the table. Defervescence was generally by rapid lysis, less frequently by lysis or by crisis.

Duration of fever in cases that recovered

Days	Number of cases		Days	Number of cases	
	Endemic typhus	Rocky Mountain spotted fever type disease		Endemic typhus	Rocky Mountain spotted fever type disease
11	4	1	17	0	4
12	2	0	18	0	2
13	5	2	19	0	0
14	28	4	20	0	4
15	9	8	21	0	11
16	2	2	22	0	5

Rash.—In endemic typhus the rash was observed first between the fourth and sixth days, but almost invariably on the fifth day. It appeared first on the chest and abdomen, particularly over the lower ribs anteriorly and laterally and over the upper abdomen, and frequently, in addition, on the medial surfaces of the upper arms, less often also on the flexor surface of the forearms and on the shoulders. In many cases there was no further extension; in a goodly number the back was next involved; and in more severe cases the eruption became pretty well generalized. It was never observed on the face in this series and in only one case were the palms and soles involved. The rash consisted of macules varying from a rose to a dull red color, 2 or 3 millimeters in diameter with rather poorly defined margins. These lesions would fade, but usually did not completely disappear, on pressure. In some cases many of the lesions were papular. The rash was in evidence for two to nine days, then rapidly disappeared. There was seldom any vestige of it by the time of defervescence. In two patients no rash was observed at any stage; one of these was a negro.

In the Rocky Mountain spotted fever type of cases the rash appeared between the third and seventh days, most frequently on the fifth or sixth day, but quite often on the third or fourth. The site of first appearance was nearly always the wrists and ankles. The rash was usually next noted on the back, then rapidly became generalized. The palms and the soles were involved quite frequently, the face occasionally, the scalp rarely. The extension was complete in two to three days. The lesions were at first faint roseolous macules, 2 to 6 millimeters in diameter. They would often fade in the mornings and reappear with the afternoon rise of fever. They grew more distinct from day to day, and by the middle of the second week were definitely petechial in all but the mildest cases. When seen at this stage and subsequently the rash was purpuric, and as a rule most abundant on the wrists and ankles, the legs, the upper part of the back, the shoulders, the lateral surfaces of the arms, the chest, abdomen, palms and soles, and the face, in the order mentioned. These petechiæ, when numerous, often became confluent; this was most often seen on the ankles. In cases with a well developed purpuric rash evidences of the rash often persisted for several weeks in the form of dusky purplish or yellowish brown spots, which were well brought out by a hot bath or by application of a tourniquet. In several of these cases there was seen a branny desquamation of the legs, commencing late in the disease or early in convalescence.

Physical findings.—At the height of the illness in both groups of cases the face was flushed, sometimes dusky, the tongue dry and coated, sometimes with red tip and edges. The pharyngeal mucosa was often inflamed. Ulceration of a tonsil was seen in one, and

ulcerated lesions of the palate in another case of the Rocky Mountain spotted fever type. Conjunctivitis was somewhat more common and more intense in endemic typhus. The spleen was enlarged and usually tender in 36 per cent of the Rocky Mountain spotted fever type cases; it was palpable in two and tender in one of the endemic typhus cases. Rigidity of the neck, with presence of Kernig's sign, was noted in 20 per cent of the Rocky Mountain spotted fever type cases, but in only one case of endemic typhus. Bronchitis was present in a few cases in each group. In the endemic typhus group the pulse was as a rule remarkably slow, even in cases with high temperatures, e. g. 100 with 105.2° F.; 96 with 105° F.; 110 with 104.2° F.; 80 with 103° F.; 86 with 103° F.; 100 with 104° F.; 84 with 104° F. The pulse tended to be higher, in ratio to the temperature, in the Rocky Mountain spotted fever type cases; this was not, however, a constant feature, as many cases had a rather slow pulse throughout. In the severest cases, and particularly in those that terminated fatally, the pulse was usually quite high, ranging from 130 to 160.

General symptoms.—The commonest symptoms at the height of the disease were, in order of frequency as follows: Prostration; headache, usually frontal; constipation; nausea and vomiting (more frequent in the Rocky Mountain spotted fever type); low backache and leg pains; unproductive cough. In the Rocky Mountain spotted fever type, pain in the back of the neck and abdominal pain were not uncommon; in endemic typhus these symptoms were rare. Photophobia and sore throat were more frequent in cases of endemic typhus. Sweats were not uncommon in both conditions. Rare symptoms were epistaxis and dysuria.

Nervous and mental.—Disturbances of the central nervous system were more severe in the Rocky Mountain spotted fever type. In both types of disease, lethargy, often associated or alternating with insomnia, restlessness, or irritability, was present in nearly all cases. Actual stupor was more frequent in the Rocky Mountain spotted fever type, and coma was present exclusively in this group. Meningismus was frequent in the Rocky Mountain spotted fever type. In severe cases of the latter there was loss of sphincter control. Hyperesthesia and tremors were occasionally noted in this disease. While a number of endemic typhus cases at some time had delirium, this was never as common, as protracted, nor as violent as that occurring in the Rocky Mountain spotted fever type.

Laboratory findings.—In most of the cases of endemic typhus, the total leucocyte count was within normal limits or there was a moderate leucopenia. In a few cases there was a low grade leucocytosis. In the Rocky Mountain spotted fever type of cases there was in most instances a definite leucocytosis. The urine contained a trace of albumin at some stage of the disease in many of the cases in both

groups. Rarely, granular or hyaline casts were found. The blood serum agglutinated *B. proteus* X_{19} in a dilution of 1:80, or more, at some stage of the disease, or after recovery, in nearly all cases of both series. Of two Rocky Mountain spotted fever type cases that recovered, one never showed a higher titer than 1:40, and the other did not at any time agglutinate the strain of X_{19} routinely used.

Complications and sequelæ.—There were no complications in our endemic typhus series. Convalescence was, as a rule, speedy. Occasionally a torpor or slight disorientation persisted for several days. In the Rocky Mountain spotted fever type of disease, convalescence was usually more protracted. There were noted in four instances a marked deafness; in three, visual disturbances; and in two, slurring speech, with slow restoration to normal. In several cases the mental confusion persisted for weeks.

Fatality.—There were no deaths in the endemic typhus group. The Rocky Mountain spotted fever type group includes seven fatal cases—death occurring on the ninth day in three instances, and on the sixth, twelfth, thirteenth, and sixteenth days in one instance each. Of 93 cases of the Rocky Mountain spotted fever type occurring in five States and in the District of Columbia in the spring and summer of 1930, 21 died—a case fatality rate of 22.6 per cent.

EPIDEMIOLOGICAL CHARACTERISTICS

Geographic distribution.—The cases comprising the endemic typhus group occurred in Baltimore, Savannah, Tampa, and in smaller urban communities in Georgia and Florida. The Rocky Mountain spotted fever type group is composed of cases that occurred, or originated, in rural communities in Delaware, Maryland, Pennsylvania, Virginia, North Carolina, and the District of Columbia. The geographic boundaries of the two diseases are not known.

Seasonal distribution.—It is generally recognized that New World endemic typhus attains its maximum prevalence in the summer and fall. The earliest case of the Rocky Mountain spotted fever type observed by us had its onset on April 7. The cases were distributed as follows: 2 in April, 7 in May, 14 in June, 19 in July, 6 in August, 1 in September (onset, September 3), and 1 in December (onset, December 9).

Race.—All of the endemic typhus cases were in white persons, with one exception, a negro. Three of the Rocky Mountain spotted fever type cases were in negroes; the remainder were in white persons.

Sex.—There was a preponderance of males in both diseases.

Age.—The bulk of the endemic typhus cases occurred in the middle age groups. The Rocky Mountain spotted fever type, however, attacked a larger proportion of children.

Incidence.—For the most part, cases of endemic typhus were sporadic. In several instances, however, multiple cases were traceable to a single source or focus of infection. For example, in one of these, three employees of a small establishment came down with the disease during the year, the dates of onset being September 1, September 20, and October 10. In 1929, three other cases had occurred at the same place, the dates of onset being August 21, September 2, and September 27. The basement of this building was heavily infested with *Rattus norvegicus*. Four of the patients had worked in the basement storeroom shortly before onset. These persons all lived under excellent sanitary conditions in different parts of the city. The Rocky Mountain spotted fever type of cases were mostly grouped in areas of 5 to 20 miles diameter. In all of these areas cases had also occurred in previous years.

Source of infection.—The following data are regarded as significant: 78 per cent of the endemic typhus cases had occurred in close association with rats, although in only 16 per cent of these had there been actual contact with rats. Eight per cent had knowledge of having been bitten by fleas within a short time preceding onset. Bites by bedbugs and by insects of undetermined type totaled 6 per cent each. One patient was infested with lice. Live rats and nests obtained from four premises at which cases had occurred were found to be infested with the fleas *Xenopsylla cheopis*, and *Ceratophyllus fasciatus*, and the rat mite *Laelaps echidninus*. The last named is not known to attack man.

In the Rocky Mountain spotted fever type group, a definite history of tick bite within three weeks prior to onset was elicited in 48 per cent of cases. In 6 per cent of cases, patients had crushed engorged ticks removed from dogs. The remainder had all occurred under conditions in which tick bite was possible. Bites by chiggers, bedbugs, and unidentified insects or arachnids totaled 16 per cent; of which half also gave a history of tick bite. In 15 per cent of the uninfected members of the households in which cases had occurred, tick bites had been noted in the 1930 season up to the time of investigation of each case. Of this group, 13 per cent had been bitten by chiggers or bedbugs. The seasonal distribution of cases of this disease corresponded quite well with the duration of the tick season, and, roughly, with the relative prevalence of ticks. In three of the focal areas a systematic collection of ticks showed the predominant species to be *Dermacentor variabilis*. Occasionally, specimens of *Amblyomma maculatum* and *Amblyomma americanum* were obtained. Rodent infestation of premises was ascertained in seven cases. In one of these, 16 live rats and a nest were secured, which were found to be free of ectoparasites.

Incubation.—Probable incubation periods could be estimated in only seven cases of endemic typhus, and were as follows: 3 of 7 days, 1 of 8 days, 1 of 7 or 8 days, 1 of 10 days, and 1 of 11 days—these periods being reckoned from isolated contact with rats or from insect bite. In the Rocky Mountain spotted fever type the probable incubation was ascertainable in 22 cases, as follows: 8 of 3 days, 2 of 4 days, 2 of 5 days, 1 of 6 days, 3 of 7 days, 1 of 8 days, 2 of 10 days, 1 of 12 days, 2 of 14 days, reckoning from tick bite or the crushing of ticks.

Multiple cases in household.—In very few instances had any precautions been taken with patients to prevent spread to other persons. In the endemic typhus series there were no secondary cases in any family. In the Rocky Mountain spotted fever type group, there were three instances of the occurrence of multiple cases in a household. In one of these, three cases occurred, with intervals of 12 days and 7 weeks. In each of the other two there were two cases which came down within a week of each other.

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PSITTACOSIS INFECTION FROM LOVE BIRDS

Five cases of a disease believed to be psittacosis, with one death, were recently brought to the attention of the health authorities in Brooklyn, N. Y. All of the cases were in related persons who had had contact with love birds brought from Habana, Cuba, on December 31, 1930. Several of the birds died after arrival in this country.

A man who had cared for two of the birds fell sick of what was at first diagnosed as pneumonia on January 13, and died 5 days later. Shortly afterwards four women, all related to the dead man, and who had been exposed to the birds and in close contact with each other, became ill. While the clinical picture of these cases was strongly suggestive of an infection of influenza with bronchial pneumonia complication, it is believed on later clinical and epidemiological evidence that the love birds were the original source of infection, and that the disease is the same as that caused by infected parrots during the winter of 1929–30.

THE PREVALENCE OF INFLUENZA

United States.—For the week ended February 14, 1931, 11,802 cases of influenza were reported to the Public Health Service (see pp. 487 and 488), as compared with 10,068 cases for the week ended February 7, and 12,828 cases for the week ended January 31, 1931.

The disease has passed the peak and is decreasing in Massachusetts, New York City, New Jersey, Maryland, North Carolina, and Illinois. In some other States it is probable that the peak has been reached.

Increased prevalence of influenza was shown by the reports for the week ended February 14, 1931, in New Hampshire, Connecticut, Ohio, Michigan, Missouri, South Carolina, Tennessee, Alabama, Arkansas, several of the Rocky Mountain States, and California.

The disease is very mild, and it is evident that the reported cases of influenza include only a small percentage of the cases of minor respiratory diseases which exist.

Europe.—In Norway influenza was spreading during the latter part of January. In Switzerland 6,862 cases of influenza were reported during the week ended January 31, 1931, as compared with 1,440 and 4,786 cases, respectively, for the preceding two weeks. The latest report from the Netherlands indicated that influenza was not epidemic in that country.

A report dated February 7, 1931, stated that in Scotland the number of deaths from influenza and other respiratory diseases was normal for the season. In Northern Ireland influenza had occurred in a few districts but not in real epidemic form. In the Irish Free State influenza was prevailing in Kilkenny, in Cork, and about Dublin.

The outbreak in Liverpool was said to be declining during the first week of February. The general death rate in 107 great towns of England and Wales during four weeks of January, 1931, was as follows:

Week ended—	Deaths per 1,000 population
Jan. 10, 1931	17.1
Jan. 17, 1931	17.2
Jan. 24, 1931	16.6
Jan. 31, 1931	16.0

COURT DECISION RELATING TO PUBLIC HEALTH

City charter amendment held to impair obligation of contract whereby city granted exclusive right to collect and haul garbage.—(Oregon Supreme Court; Elliott et al. *v.* City of Eugene et al., 294 P. 358; decided Dec. 23, 1930.) The city of Eugene, by ordinance, provided that a contract should be executed granting to Bray Bros. for a period of 3

years the privilege of collecting all garbage in the city according to the terms of a contract attached to the ordinance. Among other things, the ordinance made it unlawful for any person, firm, or corporation to haul garbage, rubbish, or refuse for hire unless a contract had first been entered into with the city for such service, it being the intention to make the attached contract with Bray Bros. an exclusive contract. A penalty was prescribed for violation of the ordinance. A contract was entered into between the city and Bray Bros., and by it the city granted to Bray Bros. "the exclusive right, franchise, and privilege of collecting, gathering, and hauling over the streets of the city * * * all garbage * * * with the right to exact charges * * * for the term of three years from and after April 1, 1928." Later the hauling of garbage for hire, mentioned in the ordinance, was more particularly defined by another ordinance providing that "any person, firm or corporation hauling garbage, refuse, or rubbish not produced by himself shall be deemed to be hauling for hire." Still later the charter of the city was amended by the addition of the following:

SECTION 1. That the city of Eugene, Oregon, never shall grant to any person, firm, or corporation a monopoly to haul garbage, rubbish or refuse within the city of Eugene, Oregon, or along or over the streets of the said city for hire, or otherwise, and that all citizens of the said city shall have the right to remove garbage, rubbish and refuse from the said city for hire or otherwise; and that any resident of the said city shall have the right to employ such person as he may desire to haul his garbage, rubbish, or refuse.

SEC. 2. That the common council shall have the power to enact reasonable measures for the sanitary removal of garbage, rubbish, and refuse; but the said measures shall apply to all alike.

SEC. 3. That all parts of the charter and ordinances of the said city which conflict with this act are hereby repealed.

The plaintiffs kept some livestock on their farms outside the city and purchased garbage which accumulated in the city and hauled it from where produced to their farms. They alleged that the defendant city officials had threatened to arrest them because of such collection and hauling of garbage and prayed for an order restraining such officials from so doing. The trial court rendered a decree in favor of defendants, which on appeal was affirmed by the supreme court. The latter court held that an exclusive franchise had been conferred by the ordinances upon Bray Bros. and that this franchise was protected by the provision of the Federal Constitution which prohibited legislation "impairing the obligation of contracts." It was held that the charter amendment did not repeal the two ordinances involved, but the court stated that "we find no occasion for withholding legal significance to the charter amendment at the conclusion of the Bray Bros. contract."

DEATHS FROM INFLUENZA AND PNEUMONIA IN LARGE CITIES

Deaths from influenza and pneumonia (all forms) in certain large cities of the United States during the three weeks ended February 7, 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

City	Influenza				Pneumonia			
	Total	Feb. 7	Jan. 31	Jan. 24	Total	Feb. 7	Jan. 31	Jan. 24
Total	1,111	382	415	314	4,793	1,522	1,747	1,529
Akron	1	1	0	0	21	6	7	8
Albany	4	3	1	0	16	9	6	1
Atlanta	2	2	0	0	35	10	15	10
Baltimore	55	26	19	10	161	57	66	38
Birmingham	10	3	3	4	34	5	13	16
Boston	12	4	5	3	141	59	41	41
Bridgeport	6	4	2	0	16	5	9	2
Buffalo	2	1	1	0	76	24	30	22
Cambridge	3	1	1	1	18	9	5	4
Camden	17	7	7	3	25	9	11	5
Canton	2	1	1	0	8	3	3	2
Chicago	116	59	38	19	421	153	173	95
Cincinnati	9	6	1	2	44	10	18	16
Cleveland	7	0	4	3	50	19	12	19
Columbus	10	3	6	1	20	8	6	6
Dallas	10	2	6	2	33	12	8	13
Dayton	4	0	2	2	18	6	4	8
Denver	11	4	2	5	40	16	13	11
Des Moines	0	0	0	0	12	3	4	5
Detroit	10	7	2	1	85	34	33	19
Duluth	5	4	1	0	5	2	1	2
El Paso	7	2	2	3	30	10	9	11
Erie	0	0	0	0	7	0	2	5
Fall River	1	1	0	0	8	5	1	2
Flint	1	1	0	0	8	3	2	3
Fort Worth	0	0	0	0	15	3	6	6
Grand Rapids	0	0	0	0	6	3	1	2
Houston	5	2	0	3	18	2	6	10
Indianapolis	10	5	3	2	47	20	12	15
Jersey City	11	4	3	4	80	13	38	29
Kansas City, Kans	4	3	0	1	27	9	7	11
Kansas City, Mo	4	3	0	1	52	17	14	21
Knoxville	6	2	3	1	13	1	6	6
Long Beach	0	0	0	0	6	1	4	1
Los Angeles	3	1	2	0	74	18	30	26
Louisville	6	4	2	0	65	14	27	24
Lowell	3	1	1	1	11	3	4	4
Lynn	0	0	0	0	12	5	4	3
Memphis	11	3	5	3	36	11	9	16
Miami	0	0	0	0	3	2	1	0
Milwaukee	6	2	4	0	50	16	20	14
Minneapolis	4	1	1	2	32	10	8	14
Nashville	4	0	4	0	25	9	8	8
New Bedford	1	0	1	0	7	2	0	5
New Haven	5	3	2	0	19	5	10	4
New Orleans	41	12	17	12	66	25	15	26
New York	373	84	142	147	1,405	362	535	508
Newark, N. J	13	2	4	7	95	43	32	20
Oakland	1	1	0	0	17	5	8	4
Oklahoma City	2	1	1	0	32	12	12	8
Omaha	0	0	0	0	24	6	9	9
Paterson	6	4	2	0	25	6	13	6
Philadelphia	151	46	61	44	407	138	141	128
Pittsburgh	19	8	9	2	155	51	58	46
Portland, Oreg	2	1	1	0	14	5	0	9
Providence	6	5	1	0	21	9	5	7
Richmond	13	8	5	0	31	13	9	9
Rochester	2	0	1	1	20	6	7	7
St. Louis	6	5	1	0	105	42	28	35
St. Paul	6	2	1	3	15	2	9	4
Salt Lake City	2	0	2	0	12	4	6	2
San Antonio	18	5	5	8	34	7	15	12
San Diego	0	0	0	0	16	4	6	6
San Francisco	9	2	4	3	26	6	12	8
Schenectady	2	0	1	1	8	4	2	2
Seattle	3	1	0	2	11	3	2	6
Somerville	0	0	0	0	11	3	7	1
South Bend	0	0	0	0	10	1	3	6
Spokane	1	0	1	0	7	0	5	2

Deaths from influenza and pneumonia (all forms) in certain large cities of the United States during the three weeks ended February 7, 1931—Continued.

City	Influenza				Pneumonia			
	Total	Feb. 7	Jan. 31	Jan. 24	Total	Feb. 7	Jan. 31	Jan. 24
Springfield, Mass	1	0	1	0	24	12	6	6
Syracuse	1	0	1	0	13	3	5	5
Tacoma	1	0	0	1	5	1	2	2
Toledo	3	2	0	1	12	1	7	4
Trenton	5	3	1	1	17	11	4	2
Utica	1	1	0	0	14	4	4	6
Washington, D. C	25	11	12	2	89	31	32	26
Waterbury	4	2	1	1	19	9	5	5
Wilmington, Del	2	0	2	0	22	9	7	6
Worcester	3	0	2	1	50	26	17	7
Yonkers	1	0	1	0	20	10	6	4
Youngstown	0	0	0	0	15	7	6	2

DEATHS DURING WEEK ENDED FEBRUARY 7, 1931

Summary of information received by telegraph from industrial insurance companies for the week ended February 7, 1931, and corresponding week of 1930. (From the Weekly Health Index issued by the Bureau of the Census, Department of Commerce

	Week ended February 7, 1931	Corresponding week, 1930
Policies in force	75, 182, 838	75, 453, 060
Number of death claims	16, 511	15, 087
Death claims per 1,000 policies in force, annual rate	11. 5	10. 4

Deaths [1] from all causes in certain large cities of the United States during the week ended February 7, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Feb. 7, 1931				Corresponding week, 1930		Death rate [2] for first 6 weeks	
	Total deaths	Death rate [2]	Deaths under 1 year	Infant mortality rate [3]	Death rate [2]	Deaths under 1 year	1931	1930
Total (81 cities)	9, 792	14. 3	857	[4] 68	13. 7	852	14. 2	13. 2
Akron	48	9. 7	7	69	10. 0	12	8. 3	8. 9
Albany [5]	34	13. 7	3	59	19. 6	4	14. 1	16. 5
Atlanta	75	14. 1	13	133	18. 0	9	16. 5	17. 0
White	47		9	143		5		
Colored	28	(6)	4	115	(6)	4	(6)	(6)
Baltimore [5]	339	21. 7	24	81	16. 7	16	17. 6	15. 4
White	272		15	65		11		
Colored	67	(6)	9	141	(6)	5	(6)	(6)
Birmingham	72	13. 9	9	91	16. 9	10	15. 1	14. 5
White	33		5	86		5		
Colored	39	(6)	4	97	(6)	5	(6)	(6)
Boston	278	18. 5	23	66	15. 5	24	17. 5	15. 4
Bridgeport	41	14. 5	4	66	18. 8	4	14. 4	14. 3
Buffalo	175	15. 7	14	57	14. 6	12	14. 5	14. 2
Cambridge	37	16. 9	2	40	11. 5	3	14. 4	13. 9
Camden	50	21. 9	3	52	17. 1	2	19. 1	14. 9
Canton	24	11. 7	1	23	7. 9	1	10. 5	11. 8
Chicago [5]	962	14. 5	82	72	12. 1	69	12. 4	11. 6
Cincinnati	158	18. 0	13	78	20. 4	16	17. 9	17. 5
Cleveland	205	11. 7	17	49	13. 1	23	11. 1	12. 2

Footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended February 7, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930—Continued

City	Week ended Feb. 7, 1931				Corresponding week, 1930		Death rate [2] for first 6 weeks	
	Total deaths	Death rate [2]	Deaths under 1 year	Infant mortality rate [3]	Death rate [2]	Deaths under 1 year	1931	1930
Columbus	90	15.9	12	117	15.0	10	14.2	15.2
Dallas	54	10.4	3		14.7	8	12.7	14.0
White	32		2			7		
Colored	22	(5)	1		(5)	1	(5)	(5)
Dayton	45	11.3	5	70	11.6	3	13.1	10.6
Denver	91	16.3	7	68	20.2	11	16.2	15.5
Des Moines	24	8.7	1	18	17.5	1	12.6	13.9
Detroit	313	9.9	42	67	11.5	52	8.6	10.2
Duluth	21	10.8	2	49	11.8	2	12.4	11.9
El Paso	39	19.4	11		13.7	3	22.2	19.7
Erie	18	8.0	5	93	10.3	0	10.6	11.8
Fall River [1] [7]	26	11.8	0	0	14.5	2	12.7	13.0
Flint	18	5.7	3	38	10.2	6	7.9	9.6
Fort Worth	31	9.7	1		14.0	7	12.5	13.2
White	26		1			4		
Colored	5	(5)	0		(5)	3	(5)	(5)
Grand Rapids	43	13.1	3	44	8.3	2	9.9	10.3
Houston	58	9.8	4		12.9	11	12.2	13.4
White	40		1			9		
Colored	18	(5)	3		(5)	2	(5)	(5)
Indianapolis	118	16.6	5	41	17.0	9	14.7	16.9
White	100		4	38		9		
Colored	18	(5)	1	67	(5)	0	(5)	(5)
Jersey City	93	15.2	13	115	12.0	17	14.7	12.4
Kansas City, Kans	45	19.1	3	62	13.7	4	15.8	13.2
White	35		2	49		4		
Colored	10	(5)	1	127	(5)	0	(5)	(5)
Kansas City, Mo	114	14.5	16	121	15.6	11	14.7	14.2
Knoxville	22	10.5	3	64	16.2	1	14.4	14.3
White	20		3	71		1		
Colored	2	(5)	0	0	(5)	0	(5)	(5)
Long Beach	36	12.3	1	24	9.4	1	11.3	11.7
Los Angeles	262	10.4	21	61	12.8	24	13.1	12.9
Louisville	82	13.9	6	51	14.2	8	17.9	14.7
White	64		6	59		6		
Colored	18	(5)	0	0	(5)	2	(5)	(5)
Lowell [7]	29	15.0	3	76	17.1	3	15.3	14.5
Lynn	21	10.7	2	52	16.3	3	13.7	12.2
Memphis	87	17.5	9	95	19.1	9	18.5	16.8
White	48		4	67		5		
Colored	39	(5)	5	145	(5)	4	(5)	(5)
Miami	34	15.8	1	25	15.5	4	13.8	12.8
White	23		1	35		2		
Colored	11	(5)	0	0	(5)	2	(5)	(5)
Milwaukee	118	10.4	19	82	11.4	19	10.0	10.6
Minneapolis	119	13.1	14	90	11.4	6	12.5	12.1
Nashville	47	15.8	6	89	15.6	10	17.0	17.3
White	34		6	120		8		
Colored	13	(5)	0	0	(5)	2	(5)	(5)
New Bedford [7]	30	13.9	4	106	12.5	4	13.2	11.7
New Haven	43	13.8	3	57	19.9	2	13.4	15.4
New Orleans	182	20.3	18	99	19.4	20	21.4	20.6
White	100		6	50		13		
Colored	82	(5)	12	196	(5)	7	(5)	(5)
New York	1,857	13.7	170	71	12.4	155	14.8	11.9
Bronx Borough	248	9.7	15	34	8.9	24	10.6	8.4
Brooklyn Borough	629	12.5	70	74	11.4	53	13.9	11.0
Manhattan Borough	720	20.7	61	104	18.4	60	22.1	17.8
Queens Borough	215	9.7	18	49	7.8	16	10.0	7.8
Richmond Borough	45	14.4	6	108	18.3	2	14.8	14.6
Newark, N. J	153	17.9	10	52	15.3	9	14.7	14.2
Oakland	52	9.3	3	38	12.0	4	12.8	13.1
Oklahoma City	46	12.2	8	110	9.2	6	11.6	9.7
Omaha	62	14.9	4	45	11.7	3	15.5	14.6
Paterson	51	19.2	4	69	13.2	9	15.4	12.4
Philadelphia	679	18.0	54	78	13.6	42	17.0	13.3
Pittsburgh	214	16.5	28	97	16.7	22	16.8	15.0
Portland, Oreg	69	11.7	2	24	16.2	5	13.4	14.7
Providence	77	15.8	7	65	15.4	4	15.4	15.9

Footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended February 7, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930—Continued

City	Week ended Feb. 7, 1931				Corresponding week, 1930		Death rate [2] for first 6 weeks	
	Total deaths	Death rate [2]	Deaths under 1 year	Infant mortality rate [3]	Death rate [2]	Deaths under 1 year	1931	1930
Richmond	85	24.0	5	73	17.1	7	17.8	16.5
White	48		2	44		3		
Colored	37	(9)	3	130	(9)	4	(9)	(9)
Rochester	75	11.8	7	64	12.2	5	13.1	11.8
St. Louis	303	19.1	22	74	15.6	12	17.2	14.9
St. Paul	47	8.9	3	31	11.9	4	10.8	12.1
Salt Lake City [4]	38	13.9	3	45	12.6	4	13.9	14.5
San Antonio	71	15.4	8		16.8	8	16.2	20.6
San Diego	55	18.3	2	41	15.7	4	17.2	16.4
San Francisco	162	13.0	8	53	17.1	7	15.0	14.8
Schenectady	30	16.3	1	29	7.1	1	10.7	10.4
Seattle	78	10.9	1	9	15.2	7	12.8	11.9
Somerville	27	13.4	5	186	12.5	2	10.9	12.6
South Bend	13	6.3	1	25	8.4	2	7.5	9.4
Spokane	21	9.4	1	26	13.5	4	13.8	13.1
Springfield, Mass	48	16.4	3	46	18.0	4	14.1	14.7
Syracuse	52	12.7	5	59	13.7	2	13.3	13.3
Tacoma	30	14.5	0	0	15.1	2	15.0	11.7
Toledo	68	12.0	3	28	14.8	5	12.4	14.0
Trenton	56	23.6	2	35	16.0	3	20.3	17.2
Utica	30	15.3	2	52	14.3	2	16.6	15.6
Washington, D. C.	188	19.9	9	50	15.5	7	18.7	16.2
White	121		4	33		4		
Colored	67	(9)	5	86	(9)	3	(9)	(9)
Waterbury	29	15.0	1	30	9.9	2	11.3	10.3
Wilmington, Del. [7]	36	17.6	3	65	13.7	2	15.7	15.1
Worcester	74	19.6	4	55	12.5	9	16.2	13.8
Yonkers	34	12.8	2	52	10.8	6	11.5	8.7
Youngstown	31	9.3	5	70	9.8	4	10.8	10.7

[1] Deaths of nonresidents are included. Stillbirths are excluded.

[2] These rates represent annual rates per 1,000 population, as estimated for 1931 and 1930 by the arithmetical method.

[3] Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

[4] Date for 76 cities.

[5] Deaths for week ended Friday.

[6] For the cities for which deaths are shown by color, the percentage of colored population in 1920 was as follows: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 16; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Miami, 31; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

[7] Population Apr. 1, 1930; decreased 1920 to 1930; no estimate made.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended February 14, 1931, and February 15, 1930

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended February 14, 1931, and February 15, 1930

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930
New England States:								
Maine	8	2	64	12	13	46	1	0
New Hampshire		1	212	4	73	22	0	0
Vermont		3	1		23	7	0	0
Massachusetts	50	71	154	15	505	510	2	5
Rhode Island	13	15	21		1	3	0	0
Connecticut	12	25	261	6	269	20	2	0
Middle Atlantic States:								
New York	106	126	[1] 179	[1] 42	760	557	15	18
New Jersey	45	117	236	22	633	362	6	4
Pennsylvania	98	158			1,880	783	12	8
East North Central States:								
Ohio	62	78	509	36	348	760	8	11
Indiana	39	34	111		684	65	0	14
Illinois	147	158	288	44	970	627	10	11
Michigan	48	66	111	7	179	440	6	32
Wisconsin	18	31	137	66	363	1,184	0	8
West North Central States:								
Minnesota	10	11	13	4	54	161	0	4
Iowa	9	11		1	11	496	3	2
Missouri	37	37	151	38	969	76	6	21
North Dakota	11	6			12	46	3	1
South Dakota	3	3	1		15	119	2	2
Nebraska	18	19	14	23	4	723	3	3
Kansas	9	19	22	5	18	342	2	6
South Atlantic States:								
Delaware	1		20		7	6	0	0
Maryland [2]	21	25	1,040	54	433	11	3	0
District of Columbia	6	18	15	1	48	9	0	0
Virginia								1
West Virginia	9	12	134	12	91	99	0	4
North Carolina	35	36	312	37	278	15	7	0
South Carolina	16	16	3,742	1,061	140		8	8
Georgia [3]	10	16	1,933	234	132	335	4	16
Florida	9	13	229	3	145	102	2	3
East South Central States:								
Kentucky					189	132	3	1
Tennessee	9	3	367	163	174	202	1	21
Alabama [3]	15	43	332	176	411	108	7	3
Mississippi	16	21					4	26

[1] New York City only.
[2] Week ended Friday.
[3] Typhus fever, 1931, 2 cases: 1 case in Georgia and 1 case in Alabama.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended February 14, 1931, and February 15, 1930—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930	Week ended Feb. 14 1931	Week ended Feb. 15, 1930	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930
West South Central States:								
Arkansas	21	5	223	206	3	5	2	4
Louisiana	21	16	189	27	3	90	2	5
Oklahoma [4]	34	24	257	131	26	267	0	5
Texas	45	41	51	55	91	120	1	2
Mountain States:								
Montana	3	1	10	----	1	21	0	1
Idaho	----	2	3	----	6	81	1	2
Wyoming	2	1	----	----	2	33	1	0
Colorado	9	8	----	----	205	65	2	0
New Mexico	4	6	83	----	22	56	1	3
Arizona	6	7	18	12	173	5	3	5
Utah [3]	1	2	18	1	----	232	1	3
Pacific States:								
Washington	9	8	----	4	50	209	0	7
Oregon	12	9	32	106	63	12	0	2
California	54	70	300	72	809	954	8	9

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930
New England States:								
Maine	0	0	38	45	0	0	2	9
New Hampshire	0	0	3	22	0	0	0	5
Vermont	0	0	12	7	0	4	0	0
Massachusetts	1	0	378	302	0	0	2	0
Rhode Island	0	0	31	31	0	0	0	0
Connecticut	0	1	73	127	0	0	0	1
Middle Atlantic States:								
New York	4	3	768	478	10	7	6	31
New Jersey	0	0	280	275	0	0	2	3
Pennsylvania	2	0	550	487	0	3	7	13
East North Central States:								
Ohio	2	0	704	379	64	170	8	7
Indiana	0	0	306	183	82	173	2	3
Illinois	3	1	481	607	42	137	3	8
Michigan	2	0	366	335	31	93	5	3
Wisconsin	0	1	133	140	7	9	2	4
West North Central States:								
Minnesota	1	0	95	126	13	6	0	2
Iowa	0	0	136	107	64	67	0	0
Missouri	0	0	253	117	73	95	1	5
North Dakota	0	1	23	41	25	27	3	0
South Dakota	1	0	13	32	26	129	0	1
Nebraska	0	0	55	59	54	74	0	1
Kansas	0	1	71	120	77	72	2	0
South Atlantic States:								
Delaware	0	0	21	16	0	0	0	0
Maryland [3]	0	1	113	95	0	0	1	5
District of Columbia	0	1	25	22	0	0	0	0
Virginia	----	1	----	----	----	----	----	----
West Virginia	1	0	30	57	8	56	1	7
North Carolina	1	2	77	62	1	14	3	7
South Carolina	1	0	12	6	3	2	2	1
Georgia [3]	0	0	62	34	0	0	1	2
Florida	0	0	9	9	0	4	5	4
East South Central States:								
Kentucky	1	0	97	88	9	15	3	2
Tennessee	0	2	47	32	5	15	3	3
Alabama [3]	0	2	35	25	2	0	3	10
Mississippi	0	1	22	16	10	1	8	1

[3] Week ended Friday.
[3] Typhus fever, 1931, 2 cases: 1 case in Georgia and 1 case in Alabama.
[4] Figures for 1931 are exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended February 14, 1931, and February 15, 1930—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930	Week ended Feb. 14, 1931	Week ended Feb. 15, 1930
West South Central States:								
Arkansas	1	1	28	32	25	27	6	5
Louisiana	1	0	27	14	57	9	7	11
Oklahoma [4]	1	1	28	68	73	117	5	13
Texas	0	0	46	57	60	43	8	1
Mountain States:								
Montana	0	0	56	43	1	18	0	0
Idaho	0	0	12	10	0	17	4	0
Wyoming	0	0	38	3	2	7	0	0
Colorado	0	0	47	23	7	34	1	0
New Mexico	0	2	5	19	1	1	0	2
Arizona	0	0	3	10	3	19	0	0
Utah [3]	0	0	13	8	0	2	1	0
Pacific States:								
Washington	1	1	46	73	30	59	2	4
Oregon	0	0	26	31	22	16	1	2
California	6	1	149	271	50	73	12	11

[3] Week ended Friday.
[4] Figures for 1931 are exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
January, 1931										
Delaware	----	17	87	----	22	----	0	135	0	0
District of Columbia	5	51	91	----	85	----	1	140	0	5
Indiana	53	257	169	----	1,253	----	4	1,559	495	7
Iowa	12	46	----	----	16	----	7	541	216	2
Massachusetts	10	337	458	----	2,483	----	9	1,418	6	16
South Carolina	----	230	7,422	556	97	215	3	82	4	25
Tennessee	48	105	1,173	16	712	9	2	428	43	40
Vermont	----	9	----	----	107	----	0	33	17	1

January, 1931

	Cases
Anthrax:	
Delaware	2
Chicken pox:	
Delaware	39
District of Columbia	187
Indiana	676
Iowa	324
Massachusetts	1,897
South Carolina	306
Tennessee	456
Vermont	240
Dengue:	
South Carolina	9
Diarrhea:	
South Carolina	271
Dysentery:	
Massachusetts	2
German measles:	
Iowa	2
Massachusetts	143
South Carolina	1
Hookworm disease:	
South Carolina	90
Impetigo contagiosa:	
Tennessee	6
Lead poisoning:	
Massachusetts	3
Lethargic encephalitis:	
Iowa	1
Massachusetts	9
Mumps:	
Delaware	11
Indiana	61
Iowa	60
Massachusetts	453

Mumps—Continued.	Cases
South Carolina	113
Tennessee	133
Vermont	68
Ophthalmia neonatorum:	
Delaware	1
Massachusetts	154
South Carolina	18
Paratyphoid fever:	
South Carolina	4
Puerperal septicemia:	
Tennessee	3
Rabies in animals:	
Delaware	3
South Carolina	18
Septic sore throat:	
Indiana	6
Iowa	2
Massachusetts	26
Tennessee	6
Tetanus:	
Indiana	1
Massachusetts	1
Tennessee	1
Trachoma:	
Massachusetts	4
Tennessee	3
Tularaemia:	
Indiana	8
South Carolina	2
Tennessee	10
Typhus fever:	
South Carolina	1
Undulant fever:	
Indiana	2
Iowa	10
Massachusetts	2
Vermont	1
Vincent's angina:	
Iowa	2
Tennessee	6
Whooping cough:	
Delaware	25
District of Columbia	40
Indiana	236
Iowa	75
Massachusetts	805
South Carolina	149
Tennessee	108
Vermont	93

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 96 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,150,000. The estimated population of the 89 cities reporting deaths is more than 31,605,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended February 7, 1931, and February 8, 1930

	1931	1930	Estimated expectancy
Cases reported			
Diphtheria:			
46 States	1,263	1,409	
96 cities	499	578	928
Measles:			
45 States	10,172	9,028	
96 cities	3,027	1,979	
Meningococcus meningitis:			
47 States	134	254	
96 cities	59	112	
Poliomyelitis:			
46 States	28	17	
Scarlet fever:			
46 States	5,708	5,551	
96 cities	2,043	2,016	1,527
Smallpox:			
46 States	1,356	1,927	
96 cities	148	180	55
Typhoid fever:			
46 States	169	162	
96 cities	25	27	31
Deaths reported			
Influenza and pneumonia:			
89 cities	1,778	1,120	
Smallpox:			
89 cities	1	0	
Indianapolis, Ind	1	0	

City reports for week ended February 7, 1931

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1922 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	14	1	0	20	0	1	8	1
New Hampshire:								
Concord	0	0	0	----	0	1	0	0
Nashua	0	0	0	----	0	0	0	0
Vermont:								
Barre	0	0	0	----	0	0	0	0
Burlington	1	0	1	----	0	0	0	0
Massachusetts:								
Boston	59	36	18	102	4	64	15	59
Fall River	6	4	3	2	1	1	4	5
Springfield	9	4	2	2	1	2	11	2
Worcester	9	4	5	1	0	6	0	26
Rhode Island:								
Pawtucket	7	1	1	----	0	2	1	1
Providence	5	9	5	----	5	21	0	9
Connecticut:								
Bridgeport	0	6	0	14	4	2	3	5
Hartford	4	7	1	23	1	75	0	6
New Haven	25	1	0	10	3	34	16	5
MIDDLE ATLANTIC								
New York:								
Buffalo	31	13	8	7	1	77	47	24
New York	171	201	72	226	84	280	43	362
Rochester	5	8	3	1	0	4	5	6
Syracuse	29	2	1	----	0	7	0	3
New Jersey:								
Camden	15	6	2	6	7	136	13	9
Newark	63	19	10	59	2	2	8	44
Trenton	8	2	0	75	3	0	0	11
Pennsylvania:								
Philadelphia	132	68	18	111	46	126	29	138
Pittsburgh	82	23	3	65	8	58	13	51
Reading	3	2	1	----	0	99	47	8
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	6	9	4	4	6	71	35	10
Cleveland	147	34	10	142	0	1	112	19
Columbus	11	3	3	4	3	2	1	8
Toledo	48	5	5	2	2	1	23	1
Indiana:								
Fort Wayne	5	4	9	----	0	35	0	8
Indianapolis	47	8	9	----	5	15	5	20
South Bend	1	1	0	----	0	0	0	1
Terre Haute	5	0	2	----	0	0	0	2
Illinois:								
Chicago	109	107	91	244	59	35	48	153
Springfield	9	1	0	3	0	59	1	6
Michigan:								
Detroit	88	49	24	107	7	11	19	38
Flint	13	3	0	3	1	2	7	3
Grand Rapids	9	2	1	----	0	1	1	3

City reports for week ended February 7, 1931—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—contd[8]								
Wisconsin:								
Kenosha	21	1	0	21	2	0	26	1
Madison	10	0	1			1	28	
Milwaukee	108	17	3	8	2	16	297	16
Racine	13	1	2	4	0	0	0	0
Superior	10	0	0		0	1	0	1
WEST NORTH CENTRAL								
Minnesota:								
Duluth	11	1	0	4	4	0	0	2
Minneapolis	41	20	7		1	29	58	10
St Paul		6						
Iowa:								
Davenport	2	1	0			0	0	
Des Moines	4	2	1			1	0	
Sioux City	11	1	0			1	3	
Waterloo	2	1	1			1	0	
Missouri:								
Kansas City	36	5	9	3	0	53	2	17
St. Joseph	5	1	5		0	0	0	0
St. Louis	21	42	26	47	5	690	12	
North Dakota:								
Fargo	6	0	0		0	0	9	3
Grand Forks	0	0	5			0	3	
South Dakota:								
Aberdeen	2	0	0			0	0	
Sioux Falls	0	0	0			1	0	
Nebraska:								
Omaha	17	6	2		0	0	7	6
Kansas:								
Topeka	12	2	0	2	0	1	5	2
Wichita	4	2	2		0	0	0	3
SOUTH ATLANTIC								
Delaware:								
Wilmington	4	2	0		0	1	2	9
Maryland:								
Baltimore	123	25	5	829	26	231	36	57
Cumberland	0	0	0	22	2	1	0	0
Frederick	0	0	2		0	1	2	1
District of Columbia:								
Washington	21	19	12	48	11	47	0	31
Virginia:								
Lynchburg	11	2	1		0	0	0	4
Norfolk	11	1	0	17	0	0	0	8
Richmond	1	5	4	16	7	191	0	14
Roanoke	12	1	2		1	2	0	1
West Virginia:								
Charleston	2	0	1	5	4	0	0	5
Wheeling	15	1	0		0	0	0	3
North Carolina:								
Raleigh	7	0	1		2	2	0	0
Wilmington	50	1	0	5	0	0	0	3
Winston-Salem	7	1	1	37	3	2	0	5
South Carolina:								
Charleston	0	1	1	323	2	66	1	8
Columbia		0						
Greenville	1	0	0		0	0	0	0
Georgia:								
Atlanta	2	4	1	335	2	39	0	10
Brunswick	3	0	0		0	0	20	0
Savannah	0	1	4	56	4	0	3	3
Florida:								
Miami	5	2	1	5	0	2	0	2
Tampa	4	1	2		0	59	0	7

City reports for week ended February 7, 1931—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington	1	1	1	----	0	0	1	2
Tennessee:								
Memphis	46	4	0	----	3	29	3	11
Nashville	1	0	0	2	2	12	1	9
Alabama:								
Birmingham	8	4	5	9	3	134	0	5
Mobile	1	0	2	26	2	1	0	1
Montgomery	17	2	1	10	----	0	0	----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith	0	0	0	----	----	0	0	----
Little Rock	0	1	0	----	0	0	0	2
Louisiana:								
New Orleans	0	14	25	18	12	0	0	25
Shreveport	9	2	0	----	0	0	0	6
Oklahoma:								
Muskogee	1	1	0	4	0	0	0	0
Tulsa	8	1	2	----	----	1	0	----
Texas:								
Dallas	18	7	10	5	2	0	2	12
Fort Worth	10	4	7	----	0	0	0	3
Galveston	2	2	0	----	0	0	0	8
Houston	6	7	6	----	2	0	3	2
San Antonio	3	3	5	----	5	1	1	7
MOUNTAIN								
Montana:								
Billings	2	0	0	----	0	0	0	3
Great Falls	1	0	0	----	0	0	0	1
Helena	1	1	0	----	0	0	0	0
Missoula	0	0	0	----	0	0	0	0
Idaho:								
Boise	0	0	0	----	0	0	0	0
Colorado:								
Denver	51	9	9	----	4	8	24	15
Pueblo	6	1	0	----	2	119	2	0
New Mexico:								
Albuquerque	0	0	0	----	0	0	0	1
Arizona:								
Phoenix	0	1	2	----	0	2	1	1
Utah:								
Salt Lake City	6	3	0	----	0	2	3	4
Nevada:								
Reno	0	0	0	1	0	0	0	1
PACIFIC								
Washington:								
Seattle	25	4	3	----	----	2	24	----
Spokane	8	3	0	----	----	11	0	----
Tacoma	9	1	9	----	0	0	1	1
Oregon:								
Portland	28	8	1	2	1	14	13	5
Salem	0	0	0	----	0	20	19	0
California:								
Los Angeles	73	43	18	134	1	40	14	18
Sacramento	49	2	0	3	1	0	6	10
San Francisco	64	16	5	18	3	4	6	1

City reports for week ended February 7, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	4	14	0	0	0	0	1	0	0	11	13
New Hampshire:											
Concord	0	0	0	0	0	0	0	0	0	0	9
Nashua	0	0	0	0	0	0	0	0	0	0	----
Vermont:											
Barre	0	0	0	0	0	6	0	0	0	0	1
Burlington	0	0	1	0	0	0	0	0	0	0	8
Massachusetts:											
Boston	85	104	0	0	0	9	1	1	0	38	278
Fall River	4	18	0	0	0	3	1	0	0	3	26
Springfield	10	11	0	0	0	4	0	0	0	6	48
Worcester	10	24	0	0	0	0	1	0	0	3	74
Rhode Island:											
Pawtucket	2	16	0	0	0	0	0	0	0	2	18
Providence	13	23	0	0	0	7	1	0	0	4	77
Connecticut:											
Bridgeport	11	4	0	0	0	1	0	0	0	0	41
Hartford	7	6	0	0	0	0	0	0	0	0	52
New Haven	9	2	0	0	0	0	0	0	0	6	43
MIDDLE ATLANTIC											
New York:											
Buffalo	30	20	0	4	0	11	0	0	0	22	166
New York	275	301	0	0	0	104	7	1	0	175	1,857
Rochester	9	88	0	0	0	22	1	0	0	12	72
Syracuse	15	20	0	0	0	3	0	0	0	11	52
New Jersey:											
Camden	7	6	0	0	0	0	0	0	0	0	50
Newark	46	35	0	0	0	13	1	0	0	26	164
Trenton	6	9	0	0	0	3	0	0	0	2	56
Pennsylvania:											
Philadelphia	102	162	1	0	0	32	2	1	1	23	679
Pittsburgh	36	37	0	0	0	78	0	1	0	19	214
Reading	5	1	0	0	0	0	0	0	0	0	34
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	21	38	1	0	0	9	0	2	0	4	158
Cleveland	49	64	0	0	0	21	0	1	0	29	205
Columbus	12	10	0	1	0	3	0	0	0	0	90
Toledo	15	11	1	6	----	4	1	0	0	6	68
Indiana:											
Fort Wayne	5	7	0	1	0	0	0	0	0	0	37
Indianapolis	11	58	5	17	1	2	0	0	0	23	----
South Bend	4	0	0	0	0	0	0	0	0	6	13
Terre Haute	4	5	0	0	0	1	0	0	0	1	15
Illinois:											
Chicago	140	214	2	0	0	47	3	0	0	44	962
Springfield	3	2	0	0	0	0	0	0	0	0	21
Michigan:											
Detroit	118	78	2	0	0	49	1	0	0	91	313
Flint	16	12	1	0	0	1	0	0	0	14	18
Grand Rapids	13	16	0	0	0	0	0	0	0	6	43
Wisconsin:											
Kenosha	2	2	1	0	0	0	0	0	0	0	9
Madison	4	1	1	0	----	----	0	0	----	1	----
Milwaukee	39	32	0	0	0	32	0		1	30	118
Racine	5	5	0	0	0	1	0		0	10	14
Superior	3	2	0	0	0	1	0	0	0	0	11
WEST NORTH CENTRAL											
Minnesota:											
Duluth	12	0	0	0	0	0	0	0	0	1	21
Minneapolis	54	29	3	0	0	8	0	0	0	14	119
St. Paul	35	----	1	----	----	----	0	----	----	----	----
Iowa:											
Davenport	0	1	2	10	----	----	0	0	----	0	----
Des Moines	11	3	2	5	----	----	0	0	----	0	24
Sioux City	2	19	0	0	----	----	0	0	----	0	----
Waterloo	3	0	0	1	----	----	0	0	----	1	----

City reports for week ended February 7, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—contd											
Missouri:											
Kansas City	19	14	1	1	0	8	0	1	0	2	114
St. Joseph	3	6	0	0	0	1	0	0	0	0	22
St. Louis	38	156	1	3	0	13	0	0	0	8	----
North Dakota:											
Fargo	1	8	0	0	0	0	0	0	0	2	12
Grand Forks	1	1	1	0	----	----	0	0	----	0	----
South Dakota:											
Aberdeen	0	0	0	0	----	----	0	0	----	0	----
Sioux Falls	2	1	0	5	----	----	0	0	----	0	7
Nebraska:											
Omaha	6	8	1	37	0	2	1	0	0	4	62
Kansas:											
Topeka	4	1	0	1	0	1	0	0	0	0	18
Wichita	10	3	0	36	0	0	0	0	0	1	----
SOUTH ATLANTIC											
Delaware:											
Wilmington	5	7	0	0	0	2	0	0	0	3	36
Maryland:											
Baltimore	39	38	0	0	0	12	2	2	1	12	339
Cumberland	0	4	0	0	0	0	0	0	0	0	8
Frederick	1	0	0	0	0	0	0	0	0	0	5
District of Columbia:											
Washington	25	37	1	0	0	12	0	0	0	7	188
Virginia:											
Lynchburg	1	0	0	0	0	1	0	0	0	0	14
Norfolk	3	4	0	0	0	2	0	0	0	11	----
Richmond	4	7	0	0	0	3	0	2	0	2	70
Roanoke	3	2	0	0	0	0	0	0	0	0	11
West Virginia:											
Charleston	1	1	0	0	0	0	0	0	0	3	31
Wheeling	2	0	0	0	0	0	0	0	0	0	21
North Carolina:											
Raleigh	1	0	0	0	0	1	0	0	0	22	8
Wilmington	0	2	0	0	0	0	0	0	0	0	11
Winston-Salem	1	2	1	0	0	1	0	0	0	0	35
South Carolina:											
Charleston	0	1	0	0	0	0	1	0	0	0	30
Columbia	0	----	0	----	----	----	0	----	----	----	----
Greenville	0	1	0	0	0	0	0	0	0	0	----
Georgia:											
Atlanta	5	43	2	0	0	4	0	2	0	1	75
Brunswick	0	0	0	0	0	0	0	0	0	0	3
Savannah	0	5	1	0	0	1	0	1	0	0	37
Florida:											
Miami	2	2	0	0	0	3	0	1	0	0	34
Tampa	1	2	0	0	0	0	1	2	0	0	32
EAST SOUTH CENTRAL											
Kentucky:											
Covington	3	21	0	0	0	1	0	0	0	2	17
Tennessee:											
Memphis	8	35	1	5	0	7	0	0	0	0	87
Nashville	2	7	0	0	0	1	0	0	0	3	47
Alabama:											
Birmingham	3	6	1	0	0	4	0	1	0	0	72
Mobile	1	2	1	0	0	1	0	0	0	0	21
Montgomery	0	1	0	0	----	----	0	0	----	3	----
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	0	0	0	----	----	0	0	----	0	----
Little Rock	1	0	0	0	0	2	0	0	0	0	----
Louisiana:											
New Orleans	8	12	1	5	0	20	3	5	1	1	182
Shreveport	1	6	0	2	0	1	0	0	0	0	28

City reports for week ended February 7, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL—contd.											
Oklahoma:											
Muskogee	1	0	3	0	0	0	0	0	0	0	
Tulsa	2	6	1	0			0	1		0	
Texas:											
Dallas	5	3	2	9	0	5	0	0	0	8	54
Fort Worth	3	5	1	1	0	5	0	1	1	0	31
Galveston	1	1	0	0	0	1	0	1	0	0	17
Houston	4	4	3	8	0	3	0	1	1	0	58
San Antonio	1	0	0	0	0	11	0	0	0	0	71
MOUNTAIN											
Montana:											
Billings	0	1	0	2	0	0	0	0	0	2	7
Great Falls	3	5	1	0	0	1	0	0	0	7	6
Helena	0	0	0	0	0	0	0	0	0	0	3
Missoula	1	0	0	0	0	0	0	0	0	10	5
Idaho:											
Boise	1	3	0	3	0	0	0	0	0	0	
Colorado:											
Denver	13	19	0	0	0	2	0	0	0	11	92
Pueblo	1	2	0	0	0	1	0	0	0	5	9
New Mexico:											
Albuquerque	1	0	0	0	0	1	0	0	0	0	8
Arizona:											
Phoenix	1	2	0	0	0	2	0	0	0	0	19
Utah:											
Salt Lake City	4	0	1	0	0	0	0	0	0	26	38
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	0	4
PACIFIC											
Washington:											
Seattle	12	16	3	3			1	0		27	
Spokane	7	9	7	3			0	0		0	
Tacoma	3	2	4	0	0	0	0	0	0	0	30
Oregon:											
Portland	6	2	13	23	0	3	1	0	0	1	69
Salem	0	0	1	0	0	0	0	0	0	0	
California:											
Los Angeles	44	38	4	6	0	22	2	0	0	15	262
Sacramento	2	2	1	0	0	0	0	0	0	12	33
San Francisco	26	7	1	0	0	11	1	0	0	33	174

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	3	0	3	0	0	0	0	1	0
Connecticut:									
Hartford	1	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York	12	6	0	1	0	0	1	0	0
Syracuse	0	0	2	1	0	0	0	0	0
Pennsylvania:									
Philadelphia	7	4	0	0	0	0	0	2	0
Pittsburgh	1	1	0	0	0	0	0	0	0

City reports for week ended February 7, 1931—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	1	1	0	0	0	0	0	0	0
Cleveland	5	2	0	0	0	0	0	0	0
Columbus	0	0	1	1	0	0	0	0	0
Indiana:									
Indianapolis	0	1	0	0	0	0	0	0	0
Illinois:									
Chicago	10	6	2	0	0	0	0	1	0
Michigan:									
Detroit	2	0	4	0	0	0	0	0	0
Wisconsin:									
Milwaukee	0	1	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	1	0	0	0	0	0	0	0	0
Missouri:									
Kansas City	0	0	1	0	0	0	1	0	0
St. Louis	3	1	0	0	0	0	0	0	0
SOUTH ATLANTIC [1]									
Maryland:									
Baltimore	0	1	0	0	0	0	1	0	0
District of Columbia:									
Washington	0	2	0	0	0	0	0	0	0
Virginia:									
Richmond	0	1	0	0	0	0	0	0	0
Georgia:									
Atlanta	1	1	0	0	0	0	0	0	0
Brunswick	0	0	0	0	0	1	0	0	0
Savannah	0	0	0	0	2	1	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis [2]	4	4	0	0	0	0	0	0	0
Alabama:									
Birmingham	1	2	1	0	0	0	0	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock	0	0	0	0	0	1	0	0	0
Louisiana:									
New Orleans	1	1	0	0	0	0	0	0	0
Shreveport	0	0	0	0	0	1	0	0	0
Texas:									
Galveston	0	1	0	0	0	0	0	0	0
MOUNTAIN									
Colorado:									
Denver	2	0	0	0	0	0	0	0	0
Arizona:									
Phoenix	0	1	0	0	0	0	0	0	0
Utah:									
Salt Lake City	0	1	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	1	0	0	0	0	0	0	0	0
Oregon:									
Portland	1	0	0	0	0	0	0	1	0
California:									
Los Angeles	3	3	0	0	0	0	0	0	0
San Francisco	0	0	0	0	0	0	0	2	1

[1] Dengue: 6 cases at Charleston, S. C.
[2] Typhus fever: 1 case at Memphis, Tenn.

The following tables give the rates per 100,000 population for 98 cities for the 5-week period ended February 7, 1931, compared with those for a like period ended February 8, 1930. The population figures used in computing the rates are estimated mid-year populations for 1930 and 1931, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 33,000,000. The 91 cities reporting deaths have more than 31,500,000 estimated population.

Summary of weekly reports from cities January 4 to February 7, 1931—Annual rates per 100,000 population, compared with rates for the corresponding period of 1930 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Jan. 10, 1931	Jan. 11, 1930	Jan. 17, 1931	Jane 18, 1930	Jan. 24, 1931	Jan. 25, 1930	Jan. 31, 1931	Feb. 1, 1930	Feb. 7, 1931	Feb. 8, 1930
98 cities	81	115	74	108	[2] 79	110	[3] 89	112	[4] 78	92
New England	79	169	91	133	106	160	106	135	82	119
Middle Atlantic	63	107	56	89	67	91	68	98	53	92
East North Central	97	130	95	126	[5] 94	144	[6] 111	139	96	102
West North Central	98	126	82	110	84	83	111	77	[7] 111	83
South Atlantic	83	90	69	112	[8] 65	116	[9] 73	116	[8] 75	76
East South Central	116	72	70	60	76	66	70	84	52	72
West South Central	142	153	108	192	81	146	183	216	156	157
Mountain	85	70	52	53	35	35	70	35	78	70
Pacific	61	73	47	81	88	79	45	69	69	36

MEASLES CASE RATES

98 cities	350	172	324	203	[2] 404	220	[3] 420	278	[4] 476	317
New England	490	121	310	172	522	230	438	341	502	322
Middle Atlantic	178	110	158	117	251	111	306	145	353	176
East North Central	63	152	87	150	[5] 74	135	[6] 144	167	151	171
West North Central	2,156	310	1,829	372	1,984	467	1,521	424	[7] 1,649	610
South Atlantic	429	128	500	182	[8] 804	172	[9] 1,032	314	[8] 1,294	268
East South Central	861	12	995	36	698	24	908	54	1,024	72
West South Central	20	293	7	373	10	582	17	293	3	648
Mountain	226	150	374	247	757	220	496	396	1,123	405
Pacific	33	443	55	579	72	626	110	1,028	112	1,028

SCARLET FEVER CASE RATES

98 cities	277	266	316	272	[2] 333	288	[3] 337	292	[4] 321	323
New England	433	431	539	397	575	457	519	346	534	530
Middle Atlantic	242	220	282	212	314	226	328	239	304	260
East North Central	363	350	398	394	[5] 383	375	[6] 380	416	331	427
West North Central	296	221	321	265	323	314	386	283	[7] 519	370
South Atlantic	276	218	304	216	[8] 343	192	[9] 312	224	[8] 304	222
East South Central	396	96	465	90	483	149	512	143	419	191
West South Central	68	129	129	125	142	98	112	73	88	129
Mountain	322	493	331	344	357	379	322	414	261	361
Pacific	72	241	72	237	119	344	143	306	145	289

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimates as of July 1, 1931 and 1930, respectively.
[2] Springfield, Ill., and Columbia, S. C., not included.
[3] South Bend, Ind., and Columbia, S. C., not included.
[4] St. Paul, Minn., and Columbia, S. C., not included.
[5] Springfield, Ill., not included.
[6] South Bend, Ind., not included.
[7] St. Paul, Minn., not included.
[8] Columbia, S. C., not included.

Summary of weekly reports from cities January 4 to February 7, 1931—Annual rates per 100,000 population, compared with rates for the corresponding period of 1930—Continued.

SMALLPOX CASE RATES

	Week ended—									
	Jan. 10, 1931	Jan. 11, 1930	Jan. 17, 1931	Jan. 18, 1930	Jan. 24, 1931	Jan. 25, 1930	Jan. 31, 1931	Feb. 1, 1930	Feb. 7, 1931	Feb. 8, 1930
98 cities	13	30	16	32	[2] 16	26	[2] 17	31	[4] 23	29
New England	0	0	0	0	0	5	0	0	0	2
Middle Atlantic	0	0	0	0	0	1	0	0	2	0
East North Central	15	27	10	36	[3] 21	19	[5] 25	39	12	34
West North Central	63	91	98	124	77	72	84	48	[7] 168	60
South Atlantic	2	0	0	6	[6] 4	2	[6] 0	6	[6] 0	4
East South Central	6	6	17	0	29	0	17	12	29	0
West South Central	37	66	27	38	34	35	51	73	81	94
Mountain	9	44	78	53	9	26	0	62	44	18
Pacific	18	146	29	123	20	152	18	152	24	126

TYPHOID FEVER CASE RATES

98 cities	4	3	5	5	[2] 6	4	[2] 5	5	[4] 4	4
New England	5	0	0	5	2	0	5	0	2	0
Middle Atlantic	2	3	2	3	3	5	2	5	1	3
East North Central	2	2	2	2	[3] 3	2	[5] 1	3	2	5
West North Central	0	2	4	12	10	2	13	4	[7] 2	2
South Atlantic	10	10	10	6	[6] 14	8	[6] 8	8	[6] 18	12
East South Central	12	6	52	12	12	18	17	6	6	18
West South Central	20	3	14	7	27	3	14	3	24	7
Mountain	17	0	9	62	17	9	0	9	0	0
Pacific	2	4	2	4	6	2	10	14	0	2

INFLUENZA DEATH RATES

91 cities	24	18	36	19	[2] 52	21	[2] 70	16	[4] 60	14
New England	5	0	10	10	12	10	34	2	46	5
Middle Atlantic	29	13	59	14	91	14	101	14	68	10
East North Central	12	12	9	17	[3] 18	17	[5] 36	13	52	12
West North Central	21	30	18	17	29	18	29	18	[7] 17	21
South Atlantic	28	34	41	24	[6] 38	34	[6] 127	12	[6] 129	12
East South Central	44	58	63	39	63	52	76	52	63	32
West South Central	76	57	79	60	83	103	100	82	73	50
Mountain	44	44	35	26	44	9	52	9	52	44
Pacific	22	12	10	12	22	15	14	2	12	7

PNEUMONIA DEATH RATES

91 cities	185	161	219	151	[2] 229	140	[2] 258	164	[4] 233	175
New England	113	184	159	126	178	138	185	193	286	160
Middle Atlantic	233	183	311	159	332	128	368	158	293	180
East North Central	110	121	124	108	[3] 125	110	[5] 177	128	176	138
West North Central	200	153	212	209	171	150	159	162	[7] 150	159
South Atlantic	243	192	237	186	[6] 280	214	[6] 345	238	[6] 325	216
East South Central	265	123	227	142	296	194	227	239	176	207
West South Central	238	189	228	221	245	288	203	292	214	270
Mountain	244	229	270	256	157	220	200	229	209	379
Pacific	134	120	118	137	103	77	115	92	72	130

[2] Springfield, Ill., and Columbia, S. C., not included.
[3] South Bend, Ind., and Columbia, S. C., not included.
[4] St. Paul, Minn., and Columbia, S. C., not included.
[5] Springfield, Ill., not included.
[6] South Bend, Ind., not included.
[7] St. Paul, Minn., not included.
[8] Columbia, S. C., not included.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—Week ended February 7, 1931.—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended February 7, 1931, as follows:

Province	Cerebrospinal fever	Influenza	Lethargic encephalitis	Poliomyelitis	Smallpox	Typhoid fever
Prince Edward Island [1]						
Nova Scotia	1	93				
New Brunswick [1]						
Quebec	1	15				9
Ontario		102		1	4	9
Manitoba	1		1	1		2
Saskatchewan					20	
Alberta [1]						
British Columbia	1	5			2	1
Total	4	215	1	2	26	21

[1] No case of any disease included in the table was reported during the week.

Quebec Province—Communicable diseases—Week ended February 7, 1931.—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended February 7, 1931, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	1	Measles	58
Chicken pox	74	Mumps	17
Diphtheria and croup	45	Scarlet fever	93
Erysipelas	2	Tuberculosis	32
German measles	2	Typhoid fever	8
Influenza	15	Whooping cough	31

Quebec Province—Vital statistics—October, 1930.—Births, deaths, and marriages for the month of October, 1930, in the Province of Quebec, Canada, with deaths from certain specified causes, are shown in the following table:

Estimated population	2,735,000
Births	6,187
Birth rate per 1,000 population	26.6
Deaths	2,807
Death rate per 1,000 population	12.1
Marriages	1,922
Deaths under 1 year	836
Deaths under 1 year per 1,000 births	135.1
Deaths from—	
Cancer	174
Cerebrospinal meningitis	2
Diabetes	28
Diarrhea	263
Diphtheria	35
Deaths from—Continued.	
Heart disease	259
Influenza	36
Measles	10
Pneumonia	151
Poliomyelitis	3
Scarlet fever	9
Syphilis	16
Tuberculosis (pulmonary)	174
Tuberculosis (other forms)	41
Typhoid fever	31
Violence	114
Whooping cough	19

DENMARK

Communicable diseases—November, 1930.—During the month of November, 1930, cases of certain communicable diseases were reported in Denmark as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	3	Paratyphoid fever	1
Chicken pox	25	Poliomyelitis	5
Diphtheria and croup	548	Puerperal fever	19
Erysipelas	287	Scabies	1,079
German measles	5	Scarlet fever	171
Influenza	4,063	Tetanus	2
Lethargic encephalitis	11	Typhoid fever	7
Measles	1,424	Undulant fever (Bac. abort. Bang)	52
Mumps	303	Whooping cough	2,242

MEXICO

Tampico—Communicable diseases—January, 1931.—During the month of January, 1931, certain communicable diseases were reported in Tampico, Mexico, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria	4	1	Smallpox (varioloid)	5	----
Enteritis (various)	----	24	Tuberculosis	----	25
Influenza	1	1	Typhoid fever	----	2
Malaria	83	5	Whooping cough	11	----
Measles	2	----			

Vera Cruz—Deaths from certain diseases—Six weeks ended December 28, 1930.—During the six weeks ended December 28, 1930, deaths from certain diseases were reported in Vera Cruz, Mexico, as follows:

Disease	Deaths	Disease	Deaths
Bronchitis	3	Pneumonia	7
Cancer	4	Septicemia	5
Diphtheria	1	Smallpox	1
Dysentery (amebic)	1	Syphilis	7
Gastro-intestinal disorders	59	Tetanus	3
Hookworm disease	4	Tuberculosis	34
Malaria	4	Typhoid fever	2

TRINIDAD

Port of Spain—Vital statistics—December, 1929 and 1930.—The following statistics for the month of December 1929 and 1930 are taken from a report issued by the Public Health Department of Port of Spain, Trinidad:

	December			December	
	1929	1930		1929	1930
Number of births	168	157	Deaths under 1 year	22	24
Birth rate per 1,000 population	29.8	27.4	Infant mortality rate per 1,000 births	130.9	152.9
Number of deaths	145	142			
Death rate per 1,000 population	25.7	24.8			

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases; D, deaths; P, present]

Place		Aug. 24–Sept. 20, 1930	Sept. 21–Oct. 18, 1930	Oct. 19–Nov. 15, 1930	Week ended— November, 1930		December, 1930				January, 1931					February, 1931	
					22	29	6	13	20	27	3	10	17	24	31	7	14
China:																	
Amoy	C	2															
	D	2															
Canton	C		1	1													
Shanghai	C	34	38	2													
	D	3	4														
Shensi Province	C	P															
Swatow	C	2															
Tientsin	C	1															
India	C	51,551	36,529	18,944	3,166	2,689	2,634	2,623	1,745								
	D	23,959	17,635	9,782	1,616	1,404	1,553	1,360	918								
Bassein	C	1															
Bombay	C	1	16	19	2	2	4	5					20	1			
	D	2	11	17	2	1	1	3					6	3			
Calcutta	C	27	24	33	4	6	2	10	9	7	6	6	36	29	24		
	D	12	15	16	4	4	1	7	6	4	5	5	25	19	19		
Madras	C		2	1					14	44	70	73	47				
	D		2						8	12	19	28	21	11	7		
Rangoon	C	2	1							1			1				
	D	1	1							1			1				
Tuticorin	C		1	1	4		1		1								
	D		1	1													
India (French):																	
Chandernagor	C	1	3	1		1											
	D		1						1								
Pondicherry	C		1	1	1	1	1	1	3	9	2	17	9	4	3		
	D		1		1	1	1	1	3	3	1	14	3	3	3		
India (Portuguese)	C	1		14					1								
	D	1		9													

Indo-China (see also table below):																	
Pnompenh	C		2	1		1	1							1	2		
	D					1	1								2		
Saigon and Cholon	C		2	1		1		2	1		4	4	4	1			
	D					1					2	2	2	1			
Philippine Islands: [1]																	
Ports—																	
Cebu	C	2															
	D	2															
Iloilo	C	10	1			1					1				2		
	D	14	4			3					1				2		
Manila	C	43	5														
	D	12	1														
Provinces—																	
Antique	C	47	40														
	D	34	18														
Bohol	C	49															
	D	20															
Bulacan	C	4	2														
	D	2	1														
Capis	C	1													3	56	69
	D														2	45	55
Cebu	C	25															
	D	11															
Iloilo	C	238	50	30	11	21	13	7	5	13	3	11	41	36	57	27	
	D	151	40	23	8	11	8	6	4	10	2	9	27	25	49	21	
Negros, Occidental	C	122	28	56	44	38	48	33	28	19	33	40	19	32	33	6	1
	D	91	20	41	33	17	45	28	22	16	26	33	15	17	19	5	1
Negros, Oriental	C															1	
	D															1	
Pampanga	C	1															
Samar	C	4	7	16	4	4		2		12	2						
	D	2	7	12	4	4		1	1	7	1						
Sorsogon	C			5													
	D			4													
Surigao	C	1	(2)														
	D	2															
Siam	C		4	4	2	1	1	2	2		2	1					
	D		1	4	2	1	1	2	2		2	1					
Bangkok	C		3	3	2	1		1	2	1	1	2	2		1		
	D		2	2	2	1		1	2	1	1	1	1				
On vessel: S. S. Malwa from Shanghai	D	1															

[1] Figures for cholera in the Philippine Islands are subject to correction.
[2] During the period from Aug. 24 to Sept. 26, 1930, 26 cases of cholera with 17 deaths were reported in Manitum, Surigao Province, P. I.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place		June, 1930	July, 1930	August, 1930	September, 1930			October, 1930			November, 1930			Dec. 1–10, 1930
					1–10	11–20	21–30	1–10	11–20	21–31	1–10	11–20	21–30	
Indo-China (French) (see also table above):														
Annam [1]	C	16	1	1										
Cambodia [1]	C	144	43	59	23	13	2	16		6		1		28
Cochin-China [1]	C	273	46	27	9	6	18	14	6	8		5		8

PLAGUE

Place		Aug. 24–Sept. 20, 1930	Sept. 21–Oct. 18, 1930	Oct. 19–Nov. 15, 1930	Week ended—												
					November, 1930		December, 1930				January, 1931					February, 1931	
					22	29	6	13	20	27	3	10	17	24	31	7	14
Algeria:																	
Algiers	C	11	6	11			1	1	1				1		1		
	D			3													
Constantine, vicinity of	C			1						3	1	46			1		1
	D														1		
Oran	C	10	10	2													
	D	1	3	1													
Plague-infected rats		10	6	1													
Philippeville	C	1	3	2								1					
	D		1									1					
Argentina:																	
Cordoba Province—Chazon	C							1						1			
Jujuy Province—Palpala	C														1		
Belgian Congo	C	5		1				1									
	D	3		1				1									
British East Africa (see also table below):																	
Tanganyika	C						3		2								
	D						3		2								
Uganda	C	202	165	171	37	17	33	24									
	D	191	164	168	37	18	33	24									

Ceylon: Colombo	C	2	3	1	1	------	4	4	4	------	4	1	1	1	1	------	------
	D	3	3	1	1	------	3	4	4	------	4	1	------	1	1	------	------
Plague-infected rats		------	------	1	1	1	------	------	------	------	------	------	------	------	1	------	------
China:																		
Manchuria—Tungliau and Nungan	C	29	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Shensi	C	P	------	1	------	------	------	------	------	------	------	------	------	------	------	------	------
Dutch East Indies:																		
Batavia and West Java	C	79	107	143	53	56	41	58	54	56	------	------	------	------	------	------	------
	D	76	103	146	53	56	39	58	54	57	------	------	------	------	------	------	------
Plague-infected rats		3	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Java and Madura	D	260	335	501	137	127	132	161	159	143	------	------	------	------	------	------	------
Egypt:																		
Alexandria	C	10	9	7	------	1	1	2	1	1	------	1	------	------	------	1	------
	D	8	6	7	------	------	------	1	------	------	------	------	------	------	------	------	------
Assiout	C	------	------	3	------	2	------	7	5	1	------	1	2	19	2	3	9
	D	------	------	1	------	------	------	1	------	------	------	1	2	2	2	------	4
Aswan	C	------	------	------	------	3	------	------	------	------	------	------	------	------	------	------	------
Beni-Suef	C	------	------	------	------	------	------	------	------	------	------	------	1	------	------	------	------
Deirout	C	------	------	------	------	------	------	------	------	------	------	------	------	19	2	------	------
	D	------	------	------	------	------	------	------	------	------	------	------	------	2	2	------	------
Gharbieh	C	------	------	------	------	------	------	------	------	------	------	------	------	------	1	------	------
	D	------	------	------	------	------	------	------	------	------	------	------	------	------	1	------	------
Girga	C	1	------	------	------	------	------	------	3	1	3	------	------	------	------	1	------
	D	------	------	------	------	------	------	------	------	1	1	------	------	------	------	1	------
Manfalut	C	------	------	------	------	------	------	------	------	------	------	23	5	21	4	------	11
	D	------	------	------	------	------	------	------	------	------	------	5	2	3	1	------	4
Minieh	C	------	------	------	------	------	------	1	------	------	------	------	------	1	1	------	------
Port Said	C	------	------	2	------	------	------	------	------	------	------	------	------	------	------	------	------
France: Marseille	C	5	4	4	------	------	------	------	------	------	------	------	------	------	------	------	------
Greece (see also table below): Pyrgos	C	------	2	------	------	------	------	------	------	------	------	------	------	------	------	------	------
India	C	2,497	2,371	2,721	677	746	931	905	987	------	------	------	------	------	------	------	------
	D	1,132	1,068	1,497	443	434	499	480	548	------	------	------	------	------	------	------	------
Bassein	C	2	------	1	------	------	------	------	------	------	------	2	1	------	1	------	------
	D	3	------	------	------	------	------	------	------	------	------	1	1	------	------	------	------
Bombay	C	1	2	1	------	------	------	------	------	------	------	------	------	1	------	------	------
	D	1	2	1	------	------	------	------	------	------	------	------	------	1	------	------	------
Plague-infected rats		47	64	30	11	5	12	4	10	9	6	13	10	6	9	------	------
Madras Presidency	C	127	196	185	33	62	28	25	30	7	------	------	------	------	------	------	------
	D	57	110	124	24	26	15	13	14	------	------	------	------	------	------	------	------
Rangoon	C	10	2	2	------	------	------	------	------	1	1	------	------	------	------	------	------
	D	9	2	1	------	------	------	------	------	1	------	------	------	------	------	------	------
Plague-infected rats		8	1	1	1	1	------	2	1	1	------	------	2	1	1	------	------
India (Portuguese)	D	------	------	3	------	------	------	------	------	------	------	------	------	------	------	------	------
Indo-China (see also table below):																		
Pnompenh	C	3	2	------	1	3	1	1	1	------	------	------	1	3	2	------	------
	D	------	3	1	1	3	1	1	1	------	------	------	1	3	2	------	------
Saigon and Cholon	C	1	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Iraq: Baghdad	C	------	1	P	2	2	------	------	------	------	------	------	------	------	3	------	------
	D	------	1	------	1	1	------	------	------	------	------	------	------	------	2	------	------

[1] Reports incomplete.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		Aug. 24–Sept. 20, 1930	Sept. 21–Oct. 18, 1930	Oct. 19–Nov. 15, 1930	Week ended— November, 1930		December, 1930				January, 1931					February, 1931	
					22	29	6	13	20	27	3	10	17	24	31	7	14
Madagascar (see also table below): Tamatave	C	1	1	5		2	1	1		2							
	D		1	3		2		1									
Morocco	C			5					9		10		13				
	D								4		4		4				
Nigeria: Lagos	C	6	5	38	4	3	2		2	1	1	1					
	D	6	5	5	4	3	2		2	1	1	1					
Plague-infected rats		10	11	13	1	1	1	2	4		1						
Peru: Lima.																	
Senegal (see table below):																	
Siam	C	3	1	6													
	D	2		5													
Bangkok	C			1				1		1	2						
	D			1				1		1	2						
Nagara Rajsima	C	1	1	1		3		8	4	3	4	6	3	2	1		
	D	1	1	1		3		6	3	3	1	3	2	3	1		
Syria: Beirut	C	5		6								1				1	
Tripolitania	C			1	4	6	2	1					2	2			
	D				1								2				
Tunisia: Tunis	C			1				P	12			1	1				
Union of Socialist Soviet Republics: Transcaucasia—Karabakh	C													6			
Union of South Africa:																	
Cape Province	C	1		1		P	P										
	D	1															
Orange Free State	C	2									2						
	D	2									2						
On vessel: S. S. Marionga de Thermiotis at Avonmouth	C									1							

[1] 8 cases of plague were reported at Lima, Peru, during December, 1930. Plague infection is said to exist in interior towns north of Lima.

Place		July, 1930	Aug., 1930	Sept., 1930	Oct., 1930	Nov., 1930	Dec., 1930
British East Africa (see also table above):							
Kenya	C	97	87	53	58	62	50
Greece (see also table above)	C				2		
Indo-China (see also table above)	C	1	2	4			
Madagascar (see also table above):							
Ambositra Province	C				4	16	
	D				4	16	
Antisirabe Province	C	24	11	21	3	10	
	D	24	11	21	3	10	
Miarinarivo Province	C	1	2	7	18	8	
	D	1	2	7	18	8	
Moramanga Province	C		27	18	20	8	
	D		27	17	20	8	
Tananarive Province	C	28	39	79	125		
	D	28	38	79	116		

Place		July, 1930	Aug., 1930	Sept., 1930	Oct., 1930	Nov., 1930	Dec., 1930
Senegal:							
Baol [1]	C	62	79	48	53		
	D	48	20	23	35	4	
Dakar [1]	C	140	108	3			
	D	122	90	8			
Louga [1]	C	138	75	61	37	10	
	D	103	33	30	25	3	
Thies [1]	C	54	34	12	24	27	2
	D	30	20	4	15	23	1
Tivaouane [1]	C	119	110	20	53	31	2
	D	70	54	14	31	25	1

SMALLPOX

[C indicates cases; D, deaths; P, present]

Place		July 27–Aug. 23, 1930	Aug. 24–Sept. 20, 1930	Sept. 21–Oct. 18, 1930	Oct. 19–Nov. 15, 1930	Week ended— November, 1930		December, 1930				January, 1931					February, 1931	
						22	29	6	13	20	27	3	10	17	24	31	7	14
Algeria:																		
Algiers	C	3								1								
Bone	C															1		
Constantine	C				1													
Oran	C								3									
Brazil:																		
Porto Alegre (alastrim)	C	1	1	26	36	20	8											
Rio de Janeiro	C				2													
British East Africa (see also table below): Tanganyika	C	242	522	95	17	7	26	18	334	23	1	57						
	D	37	60	6	1		1		35	1		3						
British South Africa: Southern Rhodesia	C	1	1	153	95	12		4	2									
	D					2		1										

[1] Reports incomplete.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		July 27–Aug. 23, 1930	Aug. 24–Sept. 20, 1930	Sept. 21–Oct. 18, 1930	Oct. 19–Nov. 15, 1930	Week ended— November, 1930		December, 1930				January, 1931					February, 1931	
						22	29	6	13	20	27	3	10	17	24	31	7	14
Canada:																		
Alberta	C	1	1	22		1						19			7			
British Columbia—Vancouver	C	6	2	2	3			1				1	2				2	
Manitoba	C		1													1		
Winnipeg	C												1					
Nova Scotia	C															1		
Ontario	C	20	10	19	59	7	12	3	1	1		8	8	10	3	32	4	
Kingston	C										2	4		1				
North Bay	C										1		1					1
Ottawa	C	7	5		37		8	1	1			2		1	1	1		
Sault Ste. Marie	C												1	11	8	5	6	
Toronto	C		1				2	2										
Quebec	C	5				1			1						2			
Montreal	C	7																
Saskatchewan	C	8	1	3	2	2		16						7	6	5	20	
China:																		
Changking	C	P	P	P	P	P		P	P	2								
Foochow	C	P	P	P	P		P		P									
Hong Kong	C										1				1			
Manchuria—																		
Harbin	C	2			1													
Kwantung—Dairen	C					2		1	1	1								
	D								1									
Nanking	C	P	P	P	P			P	P	P	P	P	P	P				
Shanghai—																		
Foreigners only	C	3	18	1	2			3	5	4	2	6	2	1	1			
Including natives	D		2		1				4	5	1	1	4	2	4			
Swatow	D	4	2	4	3	1			2		2	1	2	1				
Tientsin	C			1	1	1	1											
Chosen (see table below).																		
Colombia:																		
Barranquilla	C	2																
Buenaventura	C	2																
Cali	D			2				1										
Curacao (alastrim)	C	1																

Dutch East Indies:																		
Java—Batavia and West Java	C	12	11	14	26	2		2	2	2		2						
	D	5	4	4	4	1			1			1						
Sanggi Islands	C	36	14		29													
	D	2	3		3													
France (see table below).																		
Greece (see table below).																		
Great Britain:																		
England and Wales	C	344	341	325	372	116	160	95	137	138	135	164	228	187	272	286		
Bradford	C		3	1	1			1				1			1			
Cardiff	C			1														
Leeds	C			1	2							2						
London	C	164	120	29	172	67	27	48	42	27	38	48	48	45	47	33		
London and Great Towns	C	268	223	52	296	136	74	112	111	105	131	162	162	154	198	194		
	D		1		1		1											
Sheffield	C														1	1		
Stoke-on-Trent	C	2	1		1										1			
Scotland	C	5																
Honduras:																		
Naco	C		5															
Puerto Castilla	C												4	7	1		1	
India	C	4,877	3,131	2,322	2,412	787	865	1,037	938	942								
	D	1,246	680	572	606	221	174	274	205	262								
Bombay	C	12	6	1				1				1	1	2	2	2		
	D	10	5					1				1	1			1		
Calcutta	C	25	14	12	9	3	5	6	4	10	19	15	15	28	28	40		
	D	21	9	11	7	3	2	4	2	7	13	10	10	16	22	29		
Cochin	C	14	3	12	25	4	5	6	7	6	7	2	5	6	8			
	D		1	1	3	2		2					1					
Karachi	C	4	4			2	1								2			
	D	3	2				1								1			
Madras	C	38	34	19	9	3	5	6	6		1	3	4	7	3			
	D	11	6	8	2			2	1			1		2				
Moulmein	C	2	1												2			
	D	1	1															
Negapatam	C	4	9	14	9	3		1	2									
Rangoon	C	3		2	1		1											
	D				1													
Tuticorin	C			1														
Vizagapatam	C			1														
India (French):																		
Chandernagor	C		3	3	3						5							
	D		2	1	1						2	1		1				
Karikal	C	9	5	1								1	2	1				
	D	9	2	1									2					
Pondicherry Province	C	22	35	38	11	7	7		5	8	8	7	11					
	D	22	33	36	11	7	5		5	7	8	7	10					
India (Portuguese)	C	9	4							3								
	D	2																

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		July 27–Aug. 23, 1930	Aug. 24–Sept. 20, 1930	Sept. 21–Oct. 18, 1930	Oct. 19–Nov. 15, 1930	Week ended— November, 1930		December, 1930				January, 1931					February, 1931	
						22	29	6	13	20	27	3	10	17	24	31	7	14
Indo-China (see also table below):																		
Pnompenh	C			2			1				2							
	D	1					1											
Saigon and Cholon	C	1	1		2	2	1		1					3	1			
	D	3	1		2	1			1					2				
Iraq:																		
Baghdad	C	1	1	2														
	D	1																
Mosul Liwa	C			69	6	7	9						1		2		1	
	D			27		1	1											
Ivory Coast (see table below).																		
Mexico (see also table below):																		
Jalisco (State) Guadalajara	D	1		3	3	1		2							1			
Juarez	C	2																
	D	1		1	1													
Mexico City and surrounding territory	C	10	12	13	9	1	2		3	1	5							
	D	6	5	3	2				6	2	1							
Vera Cruz	C				1													
Morocco (see also table below).																		
Nicaragua: Porto Cabezas	C									2								
Poland	C				8	1	2						2					
Portugal:																		
Lisbon	C	50	27	16	20	11		15	11	21	17		34	27	31			
Oporto	C	1																
Siam	C			1														
Somaliland, British: Boales	C			1	1			1										
	D			1									1					
Spain	C	2	5		51	23	21	23		19	31	18						
Straits Settlements	C	8	6	5	10	3	9	2	3	3		2	1	3	1	2		
	D	3	1	1	2	1	2	2	2			1				1		
Sudan (Anglo-Egyptian)	C	42	128	82	5		3		47		47		17	1	7		3	1
	D	3	52	7	1				5		5		1		7			

Sudan (French) (see table below).																			
Switzerland: Berne Canton	C	2		1															
Syria (see table below).																			
Tunisia: Tunis	C			2									13	4	6	1			
Turkey (see table below).																			
Union of South Africa:																			
Cape Province	C		P	P	P	P		P	P	P	P	P							
Orange Free State	C	P			2	P	P	P											
Transvaal	C	P	P	P	P	P	P	P	P	P	P	P							
Upper Volta	C						6							4					
	D													2					
On vessel:																			
S. S. Clan Mactogart at Suez	C																		2
S. S. Muncaster Castle at Manila from Hong Kong	C											1							
S. S. Matheran at Suez from Calcutta	C															1			

Place		June, 1930	July, 1930	August, 1930	September, 1930	October, 1930			November, 1930			December, 1930		
						1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31
Indo-China (see also table above)	C	213	238	93	192	32	62	164		86		38	9	14
Ivory Coast	C							4		2		9		
Sudan (French)	C	76	34	39	P		17					43		96
	D	18		3			2					16		4
Syria: Beirut	C	7	2	1										

Place		July, 1930	Aug., 1930	Sept., 1930	Oct., 1930	Nov., 1930	Dec., 1930
British East Africa (see also table above):							
Kenya	C	186		424		653	
Chosen	C	3	2				
Seishin	C	2					
France	C	1					

Place		July, 1930	Aug., 1930	Sept., 1930	Oct., 1930	Nov., 1930	Dec., 1930
Greece	C	1	6				
Mexico: Durango (see also table above)	D	3	3	2			1
Morocco	C	3	8	4	4	20	
Turkey	C	51	21	19	74		
	D	13	4	2	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

Place		July 27–Aug. 23, 1930	Aug. 24–Sept. 20, 1930	Sept. 21–Oct. 18, 1930	Oct. 19–Nov. 15, 1930	Week ended— November, 1930		December, 1930				January, 1931				
						22	29	6	13	20	27	3	10	17	24	31
Algeria:																
Algiers	C	2	3		1		2									
Constantine Department	C	3		2	1		1		1			3	3		6	
Oran	C	1	1	3			3		2						1	
Bulgaria	C	1	4	6	3	1	1	3	6	3				9		
	D									1						
China:																
Manchuria—Harbin (see also table below)	C	2	2	1				1								
Shanghai	C	1														
Chosen (see table below).																
Czechoslovakia (see table below).																
Egypt:																
Alexandria	C	1	3	1	2	1	1									
	D		1		2											
Beheira Province	C		1							1						
	D									1						
Cairo	C	7	2						1	1						
Port Said	C	4	1	1	2										1	
Ireland:																
Irish Free State—																
Mayo County—																
Castlebar	C	1														
Westport	C	1														
Latvia (see table below).																
Lithuania (see table below).																
Mexico:																
Durango	D		1	2												1
Mexico City, including municipalities in Federal District	C	9	7	8	11	1	1		12	5	2					
	D	2	2	2	4	2	3		2	4	1					
San Luis Potosi	D							1	1							
Morocco	C	8	2		3	1				8						
	D			1												
Palestine	C	3	3	3	3	1	6			1	1		2		1	

Poland	C	34	23	22	37	12	----	21	9	18	5	28	11	----	----	----	
	D	3	1	2	----	1	----	3	3	3	----	----	----	----	----	----	
Portugal: Oporto	C	1	----	2	4	2	2	2	----	----	----	----	----	----	1	----	
Rumania	C	9	4	14	41	19	----	15	----	----	----	----	----	----	----	----	
	D	2	----	----	2	1	----	2	----	----	----	----	----	----	----	----	
Spain	C	----	1	2	4	----	----	1	----	----	----	----	----	----	----	----	
	D	----	1	2	----	----	----	1	----	----	----	----	----	----	----	----	
Tunisia	C	10	6	12	----	5	----	23	----	----	----	----	----	----	7	----	
Turkey (see table below).																	
Union of South Africa:																	
Cape Province	C	P	P	P	P	P	P	P	P	P	P	P	----	----	----	----	
Municipality of East London	C	----	2	1	1	1	----	----	----	P	----	2	1	----	----	----	
Natal	C	P	P	2	P	----	----	----	----	----	----	----	----	----	----	----	
Orange Free State	C	P	P	----	P	----	----	----	----	P	P	----	----	----	----	----	
Transvaal	C	P	P	P	P	P	P	----	----	P	P	P	----	----	----	----	
Yugoslavia (see table below).																	

Place		July, 1930	Aug., 1930	Sept., 1930	Oct., 1930	Nov., 1930	Dec., 1930
China: Harbin (see also table above)	C	14	5	----	3	----	----
Chosen: Seoul	C	3	2	1	7	1	----
Czechoslovakia	C	----	1	----	----	16	----
Greece: Athens	C	6	6	4	4	4	----
Latvia	C	3	1	2	----	----	----

Place		July, 1930	Aug., 1930	Sept., 1930	Oct., 1930	Nov., 1930	Dec., 1930
Lithuania	C	18	7	24	1	5	1
	D	----	1	2	----	1	----
Turkey	C	7	11	----	28	3	2
Yugoslavia	C	----	2	----	2	2	----
	D	----	1	----	1	----	----

YELLOW FEVER

	Cases	Deaths
Brazil:		
Rio de Janeiro State—		
Cambucy, Jan. 1–25, 1931	3	3
Friburgo (imported), Jan. 25–30, 1931	1	----
Padua, Jan. 18–24, 1931	1	1
Para, July 29, 1930	----	1

	Cases	Deaths
Gold Coast:		
July 10, 1930	1	----
Albosso, Aug. 4, 1930	----	1
Nigeria: Lagos, July 12, 1930 (probably laboratory infection)	1	----

×